DPU

Dr. D. Y. PATIL VIDYAPEETH, PUNE

(Deemed to be University)

(Accredited (3rd Cycle) by **NAAC** with a **CGPA** of **3.64** on four point scale at **'A++' Grade)**
NIRF-2022 : 41st (University), 3rd (Dental) and **17th (Medical)** in India
(Declared as **Category - I University** by UGC Under Graded Autonomy Regulations, 2018)
(An ISO 9001:2015, ISO 14001:2015 Certified University)

Dr. D. Y. Patil School of Science & Technology

Information Brochure

All India Online Proctor Based Entrance Test 2023
(AIET - 2023)

for Admissions to

B. TECH. COMPUTER SCIENCE AND DESIGN
B. TECH. ARTIFICIAL INTELLIGENCE (AI) AND DATA SCIENCE

PROGRAMME

राष्ट्रीय मूल्यांकन एवं प्रत्यायन परिषद

विश्वविद्यालय अनुदान आयोग का स्वायत्त संस्थान

NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

An Autonomous Institution of the University Grants Commission

Certificate of Accreditation

The Executive Committee of the
National Assessment and Accreditation Council
is pleased to declare the
Dr. D. Y. Patil Vidyapeeth
(Deemed to be University u/s 3 of the UGC Act, 1956)
Sant Tukaram Nagar, Pimpri, Dist. Pune, Maharashtra as
Accredited
with CGPA of 3.64 on four point scale
at A++ grade
valid up to February 07, 2029

Date : February 08, 2022

Director

EC(SC)/92/3rd Cycle/MHUNGN10146

Chancellor's Message

Dear Students,

It is a matter of great pleasure to communicate with you through this brochure. I believe that education is much more than merely empowerment in terms of knowledge and skills. It offers a spirit of intellectual inquiry, cultivating power of thought and imagination. It also envisages inculcation of values and development of a firmness of mind and a zeal to offer one's best to the world.

In an attempt to meet these objectives, the Vidyapeeth offers a wide range of professional programmes. In each of these programmes, we ensure high quality of education, pursuit of knowledge and creation of new ideas. As a result of this, the Vidyapeeth has been **Accredited (3rd Cycle)** by the National Assessment and Accreditation Council **(NAAC)** with **'A++' Grade.**

Through dynamic, relevant and quality education, students are empowered to look forward to the future with confidence. "No wonder, therefore, that there is always a rush for admission to the various courses of the Vidyapeeth."

The present common entrance test covers a cutting-edge technology programme, leading to B. Tech. Artificial Intelligence and Data Science as well as B. Tech. Computer Science and Design. These are high quality research oriented programmes and will lead you to satisfying careers in emerging area softechnology.

This programme is running in Dr. D. Y. Patil Biotechnology & Bioinformatics Institute of Dr. D. Y. Patil Vidyapeeth, Pune. In this centre of learning, you get the state-of-the-art infrastructure and facilities as well as competent and devoted faculty. The inspiring ambience in this institute will motivate you to do your best and at the end of the programme, you will emerge as an accomplished professional, ready to contribute your best to the society and the country.

I wish you the best of luck for the All India Online Proctor Based Common Entrance Test for admission to the professional course of your choice at the Institute.

Dr. P. D. Patil
Chancellor

Pro Chancellor's Message

Dear Students,

It is my privilege to share my views through this brochure, the best media to connect the young minds of the Nation. As aptly said by Robert Maynard Hutchins, "The objective of education is to prepare the young to educate themselves throughout their lives".

In keeping with its mission of academic excellence, Dr. D. Y. Patil Vidyapeeth, Pune, (DPU) is always continuing its inexorable developmental activities, in all fronts, in a bid to create a world class University. This is reflected by the consistent expansion of infrastructure, faculty, research contributions and national and international linkages & collaborative initiatives, signaling out globally that DPU is focused in its activities with its thrust being on developmental activities.

Visualizing an enlightened, cultured, and economically vibrant India, developed through education in diverse disciplines, we at DPU always keep in mind the commitment to contribute towards the growth of our nation, the purpose of our Vidyapeeth and also our dream to make DPU a global hub for academic excellence in the field of higher education.

Dr. (Mrs.) Bhagyashree P. Patil
Pro Chancellor

Vice Chancellor's Message

Dear Students,

I am extremely happy to interact with you through this brochure. Dr. D. Y. Patil Vidyapeeth has been recognized as an institution that has been delivering a very high-quality education with emphasis on interactive teaching methods and focused research in diverse fields. DPU is known for Academic Heritage, World Class Faculty, State- of-the-art Infrastructure, International Teaching Pedagogies, Excellent Learning Environment, Dynamic Research Culture and Emphasis on Overall Personality Development. Our curriculum innovations include enhancement of integrated modules, case based & rapid cycle learning methods, inclusion of patient safety & health care quality concepts at all levels, to name a few.

At our colleges, we provide opportunities for involvement in innovative research projects and life enhancing community service thriving on our campuses. We believe that complete education is what makes a student self-educated. To ensure this, greater emphasis is given on what students have learned and not necessarily what they were taught.

With these commendable achievements, I believe that there is still scope for us to become the best and to reach higher levels of academic excellence. I have no doubt that we will be able to achieve these objectives with cooperation from our faculties of various institutions, which include experienced, knowledgeable and caring mentors.

I assure to all Parents & Students that we will continue to strive hard to provide quality education to the youth and live through the processes and systems that are of global standards. Lastly, I congratulate you for having chosen Dr. D. Y. Patil Vidyapeeth, Pune to pursue and attain your future dreams and professional objectives in the area of Artificial Intelligence and Data Science as well as in Computer Science and Design, and wish to extend my heartiest welcome on behalf of the entire Vidyapeeth fraternity.

I wish you all the best.

Dr. N. J. Pawar
Vice Chancellor

Trustee's Message

Dear Students,

It is a great pleasure to express my views for incoming prospective students wishing to embark a career in Artificial Intelligence (AI) and Computer Science and Design at Dr. D. Y. Patil School of Science & Technology, Pune.

In addition to modern infra-structure, the team at Dr. D. Y. Patil School of Science & Technology is constituted of highly qualified and competent faculty with national and international experience in teaching and research. The center provides an ideal milieu for inter-disciplinary and collaborative research. The research activities of faculty members are well funded through extra-mural research funding from government agencies such as CSIR, DBT, DST, etc.

I am very happy to support Science &Technology teaching and research activities and wish you all a pleasant and prosperous stay at DPU family.

Dr. (Mrs.) Smita Jadhav
Trustee

1st Convocation 10th April, 2010

Felicitation of Chief Guest
Shri. Sushilkumar Shinde
The then Union Minister of Power, Government of India

Conferring the degree of
Doctor of Science (Honoris Causa) on
Baba Ramdev ji
Founder Patanjali Yogpeeth, Haridwar

Conferring the degree of
Doctor of Science (Honoris Causa) on
Prof. U. R. Rao
Former Chairman,
Indian Space Research Organization
(ISRO)

2nd Convocation 18th March, 2011

Felicitation of Chief Guest **Dr. A. P. J. Abdul Kalam,**
Former President of India

Conferring the degree of
Doctor of Science (Honoris Causa) on **Dr. Vijay Bhatkar,**
Chairman, ETH Ltd. and former Director CDAC

Conferring the degree of
Doctor of Science (Honoris Causa) on **Dr. P. Venugopal,**
Chairman, Alchemist Medical Division and
Former Director AIIMS, New Delhi

Conferring the degree of
Doctor of Letters (Honoris Causa) on **Advocate Ujjwal Nikam,**
Special Public Prosecutor, Government of Maharashtra

Conferring the degree of
Doctor of Letters (Honoris Causa) on **Dr. Narendra Jadhav,**
Member, Planning Commission, Government of India

3rd Convocation 9th June, 2012

Felicitation of Chief Guest
Smt. Pratibha Devisingh Patil,
President of India

Conferring the degree of
Doctor of Letters (Honoris Causa) on
Shri. Mohan Dharia,
Former Cabinet Minister and
Eminent Environmentalist

Conferring the degree of
Doctor of Letters (Honoris Causa) on
Shri. Montek Singh Ahluwalia,
Deputy Chairman, Planning Commission,
Government of India

4th Convocation 14th April, 2013

Felicitation of Chief Guest **Shri. Sharadchandra Pawar,**
The then Union Minister of Agriculture & Food Processing Industry, Government of India

Conferring the degree of Doctor of Letters (Honoris Causa) on
Shri. B. M. alias Babasaheb Purandare,
Eminent Historian and play-writer

Conferring the degree of Doctor of Science (Honoris Causa) on
Dr. Krishnaswamy Kasturirangan,
an Architect of India's Space Research Programme

Conferring the degree of Doctor of Science (Honoris Causa) on
Prof. M. S. Swaminathan,
Eminent Agricultural Scientist

5th Convocation 26th April, 2014

Felicitation of Chief Guest
Hon'ble Shri. Shriniwas Patil
Governor of Sikkim, India

6th Convocation 26th June, 2015

Felicitation of Chief Guest
Hon'ble Shri. Pranab Mukherjee,
President of India

Conferring the degree of Doctor of Letters (Honoris Causa) on
Shri. Sharad Pawar,
Member of Parliament (Rajya Sabha)

Conferring the degree of Doctor of Science (Honoris Causa) on
Shri. Abhijit Mukherjee
Member of Parliament (Lok Sabha)

Conferring the degree of Doctor of Science (Honoris Causa) on
Dr. Raghunath Mashelkar
National Research Professor

7th Convocation 1st April, 2016

Felicitation of Chief Guest **Dr. Harsh Vardhan,**
Minister of Science and Technology and Earth Sciences
Government of India

Conferring the degree of Doctor of Science (Honoris Causa) on
Dr. C. N. R. Rao,
National Research Professor & Linus Pauling Research Professor

8th Convocation 8th April, 2017

Felicitation of Chief Guest **Shri. Nitin Gadkari,**
Union Minister of Road Transport, Highways and Shipping, Government of India

Conferring the degree of Doctor of Science (Honoris Causa) on **Shri. A. S. Kiran Kumar**, *Secretary, Department of Space, Government of India and Chairman (ISRO)*

Conferring the degree of Doctor of Letters (Honoris Causa) on **Shri. Avdhoot Shivanand**, *Shivyog Dham, Avdhoot Shivanand Ashram, Gurugram, Haryana*

Conferring the degree of Doctor of Letters (Honoris Causa) on **Shri. Vinay Vilasrao Kore,** *Head, Warana Co-operative Industrial & Educational Complex, Kolhapur*

9th Convocation 29th March, 2018

Felicitation of Chief Guest
Shri. M. Venkaiah Naidu,
Hon'ble Vice President of India

Felicitation of
Shri. Girish Bapat
Hon'ble Guardian Minister, Pune

Felicitation of
Dr. D. Y. Patil
Former Governor of Bihar

Doctor of Science degree (Honoris Causa) conferred on
Prof. Achyuta Samanta
Founder, KIIT and KISS, Bhubaneswar
Member of Parliament (Rajya Sabha)

Doctor of Letters degree (Honoris Causa) conferred on
Dr. Pratapsinh G. Jadhav
Chairman, Pudhari Publications Pvt. Ltd., Kolhapur

Doctor of Letters degree (Honoris Causa) conferred on
Adv. Vishnu R. Parnerkar
President, Guru Seva Mandal, Parner, Maharashtra

10th Convocation 13th April, 2019

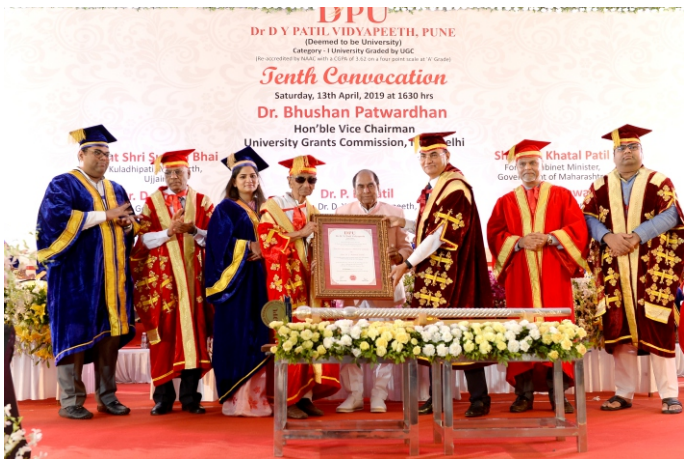
Tree plantation with the hands of Chief Guest
Dr. Bhushan Patwardhan
Hon'ble Vice Chairman, University Grants Commission, New Delhi

Members of Board of Management with
Chief Guest **Dr. Bhushan Patwardhan**
Hon'ble Vice Chairman, University Grants Commission, New Delhi

Felicitation of
Dr. Bhushan Patwardhan
Hon'ble Vice Chairman, University Grants Commission, New Delhi

Felicitation of
Dr. D. Y. Patil
Former Governor of Bihar

Doctor of Letters degree (Honoris Causa) conferred on
Sant Shri Suman Bhai
Kuladhipati, Mountirth, Ujjain

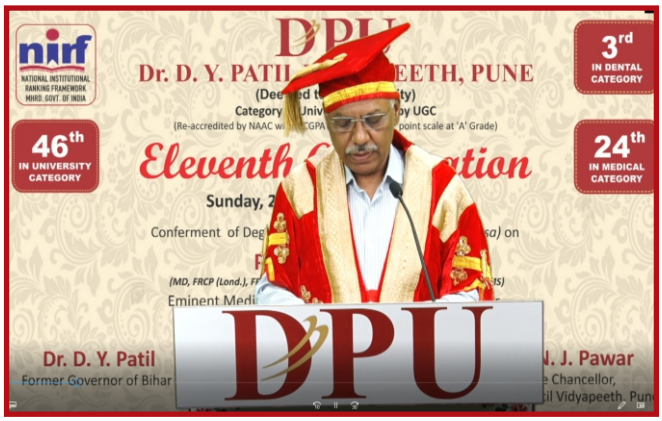


Doctor of Letters degree (Honoris Causa) conferred on
Shri B. J. Khatal Patil
Former Cabinet Minister, Government of Maharashtra

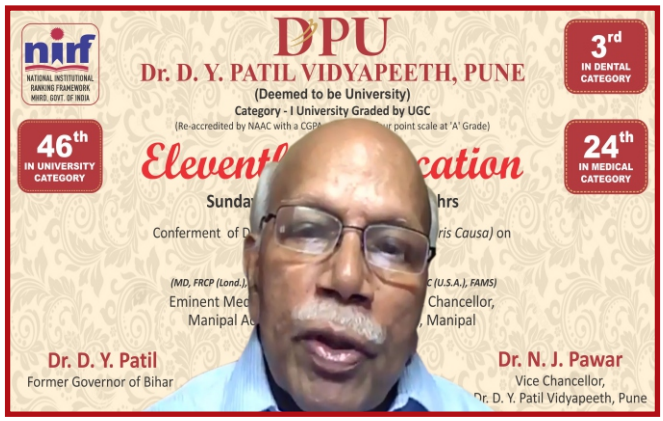
11th Convocation 28th June, 2020

This year due to COVID 19 Pandemic situation all over the world, Dr. D. Y. Patil Vidyapeeth, Pune (Deemed to be University) had conducted its 11th Convocation virtually on Sunday, 28th June, 2020 at 4.00 p.m. Hon'ble Dr. P. D. Patil, Chancellor, Dr. D. Y. Patil Vidyapeeth, Pune delivered the Convocation Address. The Degree of Doctor of Science (Honoris Causa) was conferred on Dr. B. M. Hegde, Former Vice Chancellor, Manipal University, Mangalore. Around 22 candidates were awarded gold medals.

Lamp Lighting by the hands of Hon'ble Dr. P. D. Patil, Chancellor, Dr. D. Y. Patil Vidyapeeth, Pune



Address by Hon'ble Dr. N. J. Pawar, Vice Chancellor, Dr. D. Y. Patil Vidyapeeth, Pune.



Address by Hon'ble Dr. B. M. Hegde, Former Vice Chancellor, Manipal University, Mangalore.

Dr. D. Y. Patil Vidyapeeth, Pune

Dr. D. Y. Patil Vidyapeeth, Pune was established in 2003. It is situated in Pimpri, in the city of Pune.

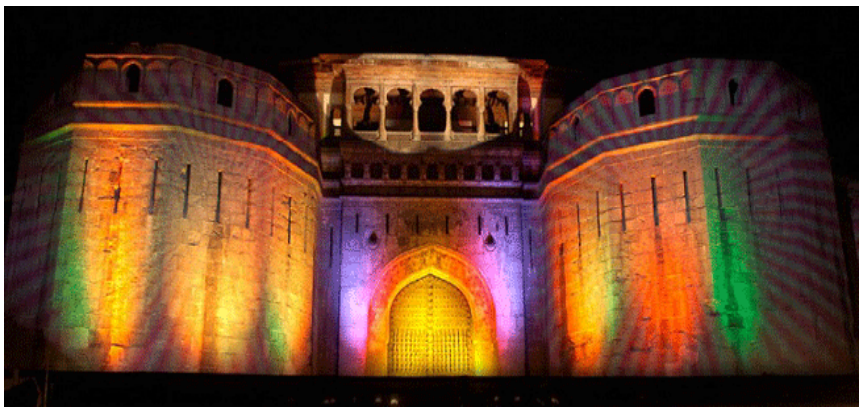
The city is steeped in cultural, educational and political history. Pune was the cultural capital of the Marathas and rightly it has earned the sobriquet as the 'Queen of the Deccan'. It is situated at the height of 575 meters above the sea level, on the Deccan plateau in the Sahyadri ranges. The city is surrounded by verdant hills and the pristine lakes. Due to the picturesque setting of the city coupled with its salubrious climate, it has become a home for many after their retirement! That is why the city is also known as the 'Pensioner's Paradise.'

The city has a rich legacy in education. It is called the "Oxford of the East," as it has the highest number of Colleges and Universities compared to any other city in India. About 25,000 foreign students from over 99 countries are pursuing their education in Pune.

It has a large number of reputed educational and research institutes, such as Savitribai Phule Pune University, Pune, Deccan College, College of Military Engineering (CME), Armed Forces Medical College (AFMC), Bhandarkar Oriental Research Institute, National Chemical Laboratory (NCL), National Defence Academy (NDA) National Center for Cell science (NCCS), National Institute of Virology (NIV), National AIDS Research Institute (NARI) and Information Technology park at Hinjewadi, etc.

Dr. D. Y. Patil Vidyapeeth, Pune is located at a distance of 13 km. from the Pune Railway Station and the Airport. The city is well connected to Mumbai and the entire country through rail, air and by roads. The city also has an International airport!

Salient Features		
Altitude	575 m	
Area	816 sq. km.	
Population	10.46 Million (approx)	
Language	Marathi, English, Hindi	
Climate	**Max. Temp (C)**	**Min. Temp (C)**
Summer	**40**	**20**
Winter	**25**	**8**
Rain	**Moderate 75 cm. p.a.**	



Shaniwarwada

Dagdusheth Ganpati

NCL

IISER, Pune

NARI

About Vidyapeeth

Vision
To help build an enlightened, culturally and economically vibrant India, developed through education in diverse disciplines.

Mission
To contribute to the socio-economic and ethical development of the nation, by providing high quality education through institutions that have dedicated faculty and state-of-the-art infrastructure, and are capable of developing competent professionals and liberal-minded citizens.

Vision 2025
To develop a knowledge centre which will be recognised for its academic pursuit not only in India but also globally

Objectives
The principal objectives of the Vidyapeeth are to :

- Establish institutions for learning and research.
- Raise academic standards in the constituent units of the Vidyapeeth.
- Develop evaluation methods that raise students objectives.
- Bring about capacity development of teachers.
- Encourage both teachers and students to undertake research.
- Enter into collaboration with higher educational institutions.
- Undertake extension activities for the development of the community.
- Develop and enter into collaborative programmes with Indian and foreign Universities and other academic institutions, scientific organizations and other agencies.
- Carry out instructions and training, distinguishable from programmes of ordinary nature, for making distinctive contributions in the areas of specializations.
- Provide special training or coaching for competitive examinations, for recruitment to the Public Services, Public Undertakings and other competitive employment opportunities
- Develop students personalities as informed and objective critics, identify and cultivate their talents, train right kind of leadership, develop right kind of attitudes, interests and values.

Establishment
Dr. D. Y. Patil Vidyapeeth, Pune was granted Deemed to be University status under section 3 of the University Grants Commission Act 1956 by the Government of India, Ministry of Human Resource Development, vide their Notification No. F.9- 39/2001 - U.3 dated 11/01/2003 on the recommendation of the University Grants Commission, New Delhi.

This status was accorded in recognition of high quality of education imparted through the state-of-the-art infrastructure and dedicated faculty of the medical college and ascertaining the potential of the institute for excellence.

Memberships : National and International

- Association of Indian Universities (AIU), New Delhi.
- Association of Commonwealth Universities (ACU), UK.
- International Association of University Presidents (IAUP), US.
- All India Management Association (AIMA), New Delhi
- Institutional Membership of the Current Science Association, Bangalore

Recognitions

- **(Accredited (3rd Cycle)** by **NAAC** with a **CGPA** of **3.64** on four point scale at **'A++' Grade)**. The Vidyapeeth has also obtained An ISO 9001:2015, 14001:2015 and Green Education Campus Certified University.
- NIRF 2022 ranking by Ministry of Education - 41st rank in University Category, 3rd rank in Dental Category and 17th rank in Medical Category in India (NIRF-2022)
- Declared as Category - I University by UGC Under Graded Autonomy Regulations, 2018
- Included in the list of Institutions Deemed to be Universities under section 12B of the UGC Act, 1556 by UGC.
- Swachh Campus Ranking 2019 by MHRD - achieved 9th rank amongst Cleanest Higher Educational Institutions in the Country.
- Registered with Foreign Contribution (Regulation) Act (FCRA) in 2013 & re-registered in 2018.
- Biotechnology and Bioinformatics Institute has been recognized by DST and awarded with DST-FIST (Level-I) support.
- Vidyapeeth has also obtained An ISO 9001:2015 and 14001:2015 Certified University
- Medical College is recognized by National Medical Commission (NMC), New Delhi and Ministry of Health and Family Welfare, Government of India.
- Dental College is recognized by Dental Council of India (DCI), New Delhi and Ministry of Health and Family Welfare, Government of India.
- Ministry of Science & Technology, Department of Scientific and Industrial Research (DSIR), New Delhi recognized as Scientific and Industrial Research Organization (SIRO).
- Ethics Committee is re-registered by Drug Controller General of India (DCGI)
- Medical College selected as a part of The Mahatma Jyotiba Phule Jan Arogya Yojana of Government of Maharashtra.
- DPU Unit of UNESCO Chair in Bioethics, Haifa was established in May 2015.

Constituent Colleges and Institutes :

- Dr. D. Y. Patil Medical College, Hospital and Research Centre, Pimpri, Pune.
- Dr. D. Y. Patil Dental College and Hospital, Pimpri, Pune.
- Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, Tathawade, Pune.
- Dr. D. Y. Patil College of Ayurved and Research Centre, Pimpri, Pune.
- Dr. D. Y. Patil Homoeopathic Medical College & Research Centre, Pimpri, Pune.
- Dr. D. Y. Patil College of Physiotherapy, Pimpri, Pune.
- Global Business School and Research Centre, Tathawade, Pune.
- Dr. D. Y. Patil College of Nursing, Pimpri, Pune.
- Dr. D. Y. Patil Institute of Optometry and Visual Sciences, Pimpri, Pune.
- Centre for Online Learning (COL), Pimpri, Pune.
- Dr. D. Y. Patil School of Science & Technology, Tathawade, Pune
- Dr. D. Y. Patil School of Design, Tathawade, Pune
- Dr. D. Y. Patil School of Liberal Arts, Pimpri, Pune
- Dr. D. Y. Patil School of Allied Health Science, Pimpri, Pune

From the Director's Desk

Dear Students,

Biotechnology deals with an array of important activities with actual as well as potential impact on every sphere of human living and welfare: from food security, environmental protection, disease diagnosis and treatment, to national security. The field of biotechnology has, of late, pervaded and percolated to every dimension of human activity, thus leading to employment generation, large scale generation of useful products, trade, economy, health/well-being, and the quality of human life, throughout the world. Bioinformatics, on the other hand, is the application of computer technology to the management of biological information. It combines computer science with biology to gather, store, analyse and integrate biological and genetic information which can then be applied to drug discovery and development. Truly, Bioinformatics is an indispensable ally of researchers in every area of biological research.

The biotechnology industry comprises of various segments: Blue (aquatic), Green (agricultural), Red (medical) and White (industrial) biotechnology. While Bio-pharma deals with the production of vaccines, therapeutics and diagnostics, Agri-biotech deals with plant tissue culture, transgenic crops, bio-pesticides, and bio-fertilizers. Bioinformatics uses biological data and speeds up development of new products. Bio-industrial sector deals with bio-products manufacturing which are used in detergent, textile, food, leather, paper and pharmaceutical industry.

It is my immense pleasure to welcome you to the Dr. D. Y. Patil Biotechnology & Bioinformatics Institute (DYPBBI), Dr. D.Y. Patil Vidyapeeth, Pune for developing a career in Biotechnology and Bioinformatics. DYPBBI is dedicated to train and develop students in the field of Biotechnology. DYPBBI offers both UG and PG courses in Biotechnology and Institute also initiated B. Tech. Program in Artificial Intelligence (AI) and Data Science. We also offer Ph.D. programmes in Biotechnology and Bioinformatics. Learning at the Institute is supported by adequate and up-to-date infrastructure facilities including subject-specific laboratories and all relevant and modern instruments required for training. Recent Infrastructure support (DST-FIST) from the Department of Science & Technology (Govt. of India) is a big boost to develop our infrastructure further.

At the Institute, we have adequate number of quality faculty with expertise in various sub-areas in Biotechnology & Bioinformatics. International exposure and dedication is our other strength. We pay substantial attention to the essential requirement of hands-on experience through research projects. In this way, we ensure that the students become competent for further studies and employment at various organizations including industry.

Beyond this, DYPBBI is an exciting place for co-curricular and extra-curricular activities such as symposia and seminars, students' fests, quiz competitions, Science-day activities, blood donation camps and other such activities. These events provide students an opportunity to develop management and communication skills, as well as creating an excellent ambience for education in Biotechnology, Bioinformatics and Artificial Intelligence. We are very proud of our past students, many of whom are well-placed after completion of their studies. I, along with my excellent team of student-centric teachers and administrative staff, welcome you to the exciting field of biotechnology through the DYPBBI. I wish you good luck for the forthcoming All India Biotechnology Online Proctor Based Entrance Test Examination and shall be looking forward to your admission in our Institute.

Dr. J. K. Pal
Director

Dr. D. Y. Patil School of Science & Technology

Main Building

Reception

Interior

Marigold Hostel

About The Institute

The Institute

Dr. D. Y. Patil School of Science & Technology is a premier institute. It is a constituent of Dr D. Y. Patil Vidyapeeth, Pune (Deemed-to-be-University). The fully-equipped world-class campus is strategically located at Tathawade on Pune-Mumbai Highway. Dr. D. Y. Patil School of Science & Technology is now offering B. Tech. (Computer Science and Design) and B. Tech.(Artificial Intelligence and Data Science)

It is a 4-year full-time degree programme approved by the All India Council Of Technical Education (AICTE). The programme is designed in close collaboration with experts from industry and academia to attract students from all over the country. It integrates constantly evolving industry requirements, hands-on project experiences, and a masterfully crafted curriculum to deliver the industry ready Engineers and Data Scientist.

Infrastructure

Institute is having a building with sixty five thousand sq. ft. area. The Institute has developed state-of-the-art lecture rooms equipped with LCD and overhead projectors, Public address (PA) system etc. It has a well equipped library with titles from foreign and Indian authors. Institutional library has a rich collection of text books, reference books & national and international journals, including e-books and e-journals. Well-equipped laboratories as required for efficient teaching and research are in place. Computer laboratory is equipped with ninety five personal computers with LAN connection and 24X7 high speed internet facilities through which students can access scientific literature, lectures by faculty, industry news which would help them to create general awareness in the discipline.

It is also possible to access Bioinformatics databases and software, public domain software for molecular graphics and informatics in addition to in house software and application software from commercial vendors (e.g. SYSTAT for statistical analysis, Bioinformatics packages:- V life, Flexy and HYPERCHEM). The institute has 21 laboratories for: Biochemistry, Microbiology, Industrial Biotechnology, Animal & Plant Tissue Culture, Molecular Biology, Instrumentation, Engineering Graphics and two computer laboratories. Wet laboratories are equipped with spectrophotometers (UV-VIS, double beam), electronic balances, high speed cooling centrifuge, deep fridge-150^{0}C, BOD incubators, HPLC, Gas chromatography, biosafety cabinets, ELISA reader, Gel Doc System, Fermenters, PCR machines etc. Further, the Institution has ambitious plans for developing one of the best Research and Development center for contract research program in Pune.

Hostel Accommodation:

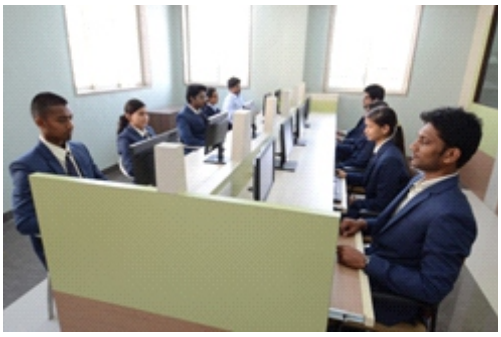
Girls & Boys Hostel facilities are available on payment basis subject to availability. A well-built hostel of 32,256 Sq. ft. area is available on campus for girls, having mess facilities on payment basis. The rooms are well furnished along with the amenities like Internet, Telephone, Doctor on Call, hot water facility etc. Reading room & Central TV room are also available.

Research

Dr. D. Y. Patil School of Science & Technology Institute has established research facilities in Biotechnology & Bioinformatics area in a short span of time. The Institute has received research funding from National & International agencies like Department of Science & Technology (DST), Govt. of India, Department of Biotechnology (DBT), Govt. of India & Swedish International Development Corporation Agency (SIDA), Sweden. The faculty publish papers in National & International peer reviewed journals & present their research along with their students at National & International conferences. The Institute has published 170 research papers, 15 book chapters & 300 research abstracts since 2009. Nearly 20% students pursue higher studies in reputed national & international universities giving strong alumni to the Institute. Under bilateral exchange program our faculty and students are deputed to University of Skovde, Sweden. Students for exchange program are selected based on their overall academic performance. Further details are available on www.dypsst.dpu.edu.in

Lecture Hall 1-Ongoing Class

Lecture Hall 2- Ongoing Class



Information Technology Lab

Student Hostel Room

Student Study Tour (NIO, Goa)

The Programme

B. Tech. Artificial Intelligence and Data Science

The Bachelor **of Technology (B. Tech.) in Artificial Intelligence and Data Science**, is a 4-year full-time degree programme approved by the All India Council Of Technical Education (AICTE). The programme is designed in close collaboration with experts from industry and academia to attract students from all over the country. It integrates constantly evolving industry requirements, hands-on project experiences, and a masterfully crafted curriculum to deliver the industry ready Engineers and Data Scientist.

B. Tech. Artificial Intelligence and Data Science course has eight semesters, this degree course is designed to upskill and train our students in worlds most in-demand Technology. The whole curriculum is delivered through our experienced and eminent faculty members and industry experts to enable students to leverage Machine Learning, Artificial intelligence and Data Science for Automation, better decision making and competitive-advantages.

Artificial Intelligence and data science subjects as: Mathematics computational Statistics, fundamental of programming Languages ,project based learning, discrete mathematics, data structures, System programming and operating System, Software Engineering, database management system, management information system, artificial intelligence, advance databases, Internet of things, human computer interface, Quantum AI, machine learning, pattern recognition, Deep learning, information retrieval, Big data and analytics, data modelling and visualization, distributed system.

Computer Programming Languages such as: Introduction to Computers & C Programming, C++ and object oriented Programming, Python Programming, R programming.

Bioinformatics and Biotechnology related elective subjects as : Structural Biology and Bioinformatics, , Clinical Science and Data management, Bio-inspired Algorithms, Bio- mechatronics, AI in Healthcare, Epidemiology and Public Health, AI in Agriculture, Chemoinformatics and Drug Designing.

Computer Science and Engineering Related Elective Subjects as: Cloud computing, High Performance computing, Cyber physical system, Soft Computing, Blockchain Technology, Web Mining and Text Mining, Principles of Compiler Design, Mobile Computing, Cyber Security, Software Testing and Quality Assurance, System modeling and Design.

Artificial Intelligence and Data Science and opportunities it offers:

Artificial Intelligence is one of the fastest-growing and demanding sectors in the field of technical organisations.

74% of Indian business heads believe that AI can augment economic growth*. As modern organisations turn toward and Artificial Intelligence (AI) Data science for responsive and automated business solutions, skilled talent that will help them harness the full potential of these technologies, are in high demand.

Keeping this need in mind, **Dr. D. Y. Patil School of Science & Technology Institute** is offering the Bachelor in Technology (B. Tech) in **"Artificial intelligence and Data Science"** to upskill and train Students in the world's most in-demand Tech-Field.

The scope of AI has expanded into many sectors, including healthcare, transport, and security. Due to such growth, multiple industries require the expertise of skilled AI professionals and companies like Amazon, Infosys, Capgemini, TCS, Wipro etc. are recruiting students on high packages.

Skills you will acquire after completing Artificial intelligence and Data Science Programme

- The ability to identify and assess the possibilities for AI and **build a business case for its implementation.**
- A strong conceptual understanding of the technologies behind AI such as **machine learning, deep learning, neural networks, and algorithms.**
- A contextual understanding of AI, its history, and evolution, helping you to **make relevant predictions for its future trajectory.**
- Data roles, the basics of data and the steps of analytics.
- Data Visualization
- Regression Analysis

The Programme

B. Tech. Computer Science & Design

Bachelor of Technology in Computer Science and Design, or B. Tech. (Computer Science and Design), is a four-year Undergraduate degree programme, designed to produce graduates who are not just familiar with computing techniques, tools, and technologies, but also with design approaches and new technologies. Computer Science and Design is a subset of Computer Science and Engineering, which includes not only computing technologies, software, programming, and tools, but also design methods and interaction approaches. The course seeks to provide students with an interdisciplinary skill set that will enable them to work in a variety of industries, including the IT industry, animation, virtual reality, augmented reality, multimedia, robotics, game development, entertainment, and digital analytics. The B.Tech. in Computer Science and Design (CSD) aims to develop graduates that are not only well versed with computing approaches, tools, and technologies, but are also experienced with Design approaches. The B.Tech. in Computer Science and Design (CSD) program will prepare students to work in the IT industry as well as digital design & media industry like gaming, animation, virtual/augmented reality, user interfaces etc., as well as allow students to take up higher studies in CS or in Design.

Opportunity in various disciplines for their career such as entertainment, arts, games,digital analytics, mobile application development, web/product design, cyber security,and other interactive industries around the world. Job roles include Software Engineer, Games Developer, 3D programmer, Web Developer, Programmer, Cyber-Security Consultant, Data Engineer, Database Graphics Designer, Information Systems Manager, Multimedia Programmer, Machine Learning Engineer, Mobile Application Developer and Systems Architect. Different sectors available are Government Organization, IT Industry, Education, and Research. Students can pursue higher studies in CS/IT or in Design. Recruiters are Hyperlink InfoSystem, Infosys, Zensar Technologies, TCS, Tech. Mahindra, Toonz etc.

Computer Science and Design is in high demand across the globe in the current era. The students will have the ability to design creative solutions in areas such as animation, AI powered gaming, virtual reality and augmented reality etc. The designing skills can be extended to solving real time problems using Human Computer Interaction (HCI) and better visualisation of the products. Modern Tools and platforms are used and enhanced to develop applications / products for new media design in areas like multimedia, animation, virtual reality, gaming etc. Some of the major topics covered in this course include Programming Languages, Software Development, Website Construction, Image Processing, Spatial Computing, Media Computing, Animation and Graphics, Game Design and Development, 2D and 3D Animation, Human centered AI, Robotics and Virtual reality etc. 100% internship and placement assistance

Eligibility Criteria

Eligibility Criteria for appearing the Entrance Test

a) The candidate should be an Indian National.

b) Minimum age: 17 years on or before 31st December 2022

c) The candidate must have either appeared at Higher Secondary Certificate (HSC / Std. XII) examination OR equivalent qualification of any board in India or abroad, with Physics, Chemistry and Maths as compulsory subjects and biology or Life Sciences as additional subjects, if the result of the exam has been declared, he / she must have passed the same examination with minimum 50% marks in Physics, Chemistry and Maths taken together (45% for the Reserve Category candidates) OR The candidate must have passed the 3 year diploma after Senior Secondary Certificate (SSC/X) or The candidate must have qualified JEE main examination.

Eligibility for NRI / PIO / FN

A candidate in any of these categories shall have completed 17 years of age on or before 31st December 2022. He/she must have Physics, Chemistry, Maths and English (and desirably Biology or Life Sciences) at the CBSE, ISC, HSC or an equivalent examination. In the case of a student from any school that follows the American system of education, the candidate must have studied Physics, Chemistry and Maths (and desirably Biology) at AP' (Advanced Placement) level and must have minimum 'C' grade in these subjects.

In the case of students passing Cambridge International Examination (CIE) the candidate should have passed Physics,

Chemistry and Maths at "Advanced" level along with English at "Advanced Subsidiary" (AS) level.

Subjects and Syllabi for the Entrance Test

The Entrance Test will consist of 100 objective type multiple choice questions (MCQs) in the subjects of Physics, Chemistry and Mathematics, carrying 100 marks (25 marks each for Physics & Chemistry and 50 marks for Mathematic subject). The recommended syllabus for the test has been given in this brochure as Annexure I.

Library (Reading hall)

Intake Details

1. Duration and Intake Capacity (No. of Seats):

Course	B. Tech. Artificial Intelligence and Data Science	B. Tech. Computer Science & Design
Duration (Years)	4	4
No. of Seats	**60**	**60**

2. Distribution of Seats:

Course	General Category Seats 85%	NRI/PIO/FN Category Seats 15%
B. Tech. Artificial Intelligence and Data Science	**51**	**9**
B. Tech. Computer Science & Design	**51**	**9**

(NRI : Non Resident Indian; PIO : Person of Indian Origin; FN : Foreign National)

Reservation will be as per directives of the Government of India, for Universities established under Section 3 of UGC Act 1956 by Govt. of India, through the University Grants Commission as and when received.

General Category:
Admissions to this category shall be made on the basis of the merit of the candidates, who have qualified at the AIET-2023

NRI/PIO/FN Category:
A candidate belonging to this category is not required to appear at the AIET-2023. However, he/she shall submit a separate application, in the prescribed form, available in the Vidyapeeth office and on the Vidyapeeth website. A committee, appointed by the competent authority for the purpose shall admit candidates on the basis of their inter se merit. The candidate will be required to pay a processing fee of US $ 200.

In case any seat earmarked for NRI/PIO/FN is not filled in by the candidate(s) of any of these subcategories, the Management shall fill in such vacant seat(s) from the candidate(s) who has / have cleared the AIET-2022. and has / have applied for the seat separately in the prescribed form available in the Vidyapeeth office and website.

NRIs, PIOs and FNs:

An NRI is a person who is not a resident or who is not ordinarily resident. A person is treated as not ordinarily resident (i) if he/she has been resident in India for less than 182 days in the year preceding the date of application; or (ii) If he/she has been in India for less than 365 days during the four years immediately preceding the date of application.

A PIO is a person having foreign citizenship (except Pakistan and Bangladesh) within NRI status, but who holds a foreign passport at the time of sending application or at the time of consideration of admission and during the period of his study and whose one / both parents or anyone/both grand parents is (or was) / are (or were) citizen(s) of India by virtue of the provisions of the Constitution of India or Section 2(b) of Citizenship Act 1955 (Act No. 57 of 1955).

An FN is a person having citizenship of a foreign country (any country other than India) and not having the status NRI and / or PIO.

Important:
Under the NRI, PIO and FN categories, only those students who have studied and passed the qualifying examination from schools and/or colleges located in foreign countries (all countries other than India) shall be considered. This will include the students studying in schools and colleges situated in the foreign countries, even if the concerned school/college is affiliated to any Board of Secondary Education or a University in India. However, wards of NRIs, PIOs or FNs, who are studying for the qualifying examination in schools located in India, are excluded.

Artificial Intelligence & Computer Science Infrastructure

Teaching & Research Infrastructure Facilities

Data Science Laboratory

Super Computer Training Facility

Library - Book Stacking Area

Classroom

Technically Advanced Computer Laboratory

Faculty Details

S.N.	Name of the Staff	Qualification	Designation	Teaching/Research Experience after PG
1.	Dr. J. K. Pal	M.Sc. (Zoology), Ph.D. (Developmental Biology)	Director	44 years
2.	Dr. Neelu Nawani	M.Sc., Ph.D. (Microbiology)	Professor	27 years
3.	Dr. Minal Wani	M.Sc., Botany, Ph.D. (Plant Physiology)	Professor	27 years
4.	Dr. Nilesh Sharma	M.Sc., Ph.D. (Molecular Biology)	Professor	16 years
5.	Dr. Rajesh Kumar Gupta	M.Sc., Ph.D. (Life Science)	Asso. Professor	18 years
6.	Dr. Manjusha Dake	M.Sc., Ph.D. (Biochemistry)	Asso. Professor	23 years
7.	Dr. Shuchi Nagar	M.Sc., Ph.D. (Molecular Modeling & Computational Drug Design)	Asso. Professor	13 years
8.	Dr. Soumya Basu	M.Sc. (Microbiology) Ph.D. (Life Science)	Asso. Professor	19 years
9.	Dr. Rachna Pandey	M.Sc., (Botany) Ph.D. (Biotechnology)	Asso. Professor	23 years
10.	Dr. Supriya Kore	M.Sc. Ph.D.(Microbiology)	Asst. Professor	22 years
11.	Ms. Arti Kale	M.Sc. (Microbiology) SET	Asst. Professor	21 years
12.	Mr. Amol Salagare	M.Sc. (Microbiology) NET	Asst. Professor	16 years
13.	Dr. Amit Ranjan	M.Sc. (Biotechnology) Ph.D. (Cancer, Invasion & Metastasis)	Asst. Professor	15 years
14.	Dr. Satish Sasikumar	M.Sc. (Zoology), Ph.D. (Zoology / Developmental Genetics)	Asst. Professor	21 years
15.	Dr. Sarika V. Pawar	M.Sc., Ph.D. (Microbiology)	Asst. Professor	18 years
16.	Dr. Viniti D. Vaidya	M.Sc. (Microbiology), Ph.D. (Biotechnology)	Asst. Professor	9 years
17.	Dr. Arvind Goja	M.Sc. (Biochemistry), Ph.D. (Nutrition & Food Science, Cancer & Metabolonics)	Asst. Professor	11 years
18.	Dr. Swapnil Gaikwad	M.Sc., Ph.D. (Biotechnology)	Asst. Professor	13 years
19.	Dr. Afreen Huda	M.Sc., Ph.D. (Biotechnology)	Asst. Professor	13 years
20.	Dr. Ashwini Puntambekar	M.Sc., M.Phil, Ph.D. (Biotechnology)	Asst. Professor	18 years
21.	Dr. Manisha Junnarkar	M.Sc., Ph.D. (Biotechnology)	Asst. Professor	17 years
22.	Dr. Gayatri Gera	M. Tech. (Chemical Engineering), Ph.D. (Biological Sciences)	Asst. Professor	11 years
23.	Mr. Sampatkumar Jadhav	M. Tech. (Biotechnology), NET, GATE	Asst. Professor	12 years
24.	Dr. Jyoti Deshpande	M.Sc., Ph.D. (Biotechnology)	Asst. Professor	15 years
25.	Dr. Aditee Rane	M.Sc., Ph.D. (Physics)	Asst. Professor	5 years
26.	Dr. Sailaja Allika	M. Tech., Ph.D. (Chemical Engineering)	Asst. Professor	13 years
27.	Dr. Satish Raut	M.Sc. Biotechnology, Ph.D. (Medical Biotechnology)	Asst. Professor	7 years
28.	Dr. Ganesh Patil	M. Sc. Microbiology, Ph.D. Biotechnology	Asst. Professor	19 years
29.	Dr. Heena Tabassum	B. Tech., M. Tech. Biotechnology, Ph.D. Biotechnology	Asst. Professor	11 years
30.	Ms. Akanksha Goel	M. Tech. (CSE)	Asst. Professor	11 years
31.	Dr. Supriyo Chowdhury	M. Sc. (Botany) Ph. D. (Plant Molecular Biology)	Asst. Professor	07 years
32.	Mrs. Rashmi Y. Pathe	M. E. (Communication Network)	Asst. Professor	15 years
33.	Mrs. Mili Lal	M. E. (Information Technology)	Asst. Professor	12 Years
34.	Dr. Utkarsh Raj	M. Tech. Bioinformatics, Ph.D. Bioinformatics	Asst. Professor	5 Years
35.	Mrs. Poi Tamhankar	M.E. (Computer Engineering)	Asst. Professor	4 Years
36.	Mrs. Suwarna Karankan	M.E. (Computer Engineering)	Asst. Professor	9 Years
37.	Dr. Subhayan Sur	M.Sc., Ph.D. (Biotechnology)	Asst. Professor	9 Years

Category wise Salary Pattern for the Academic Positions

S.N.	Designation	Pay Scale
1	Assistant Professor	PB - 15600 - 39100 AGP - 6000 / 7000 / 8000
2	Associate Professor	PB - 37400 - 67000 AGP - 9000
3	Professor	PB - 37400 - 67000 AGP - 10000

Discipline & Conduct of the Student

1.1 Obligations of the Student

1.1.1 Conduct himself/herself properly

1.1.2 Maintain proper behavior.

1.1.3 Observe strict discipline both within the campus, hostel & outside of the Institution.

1.1.4 Ensure that no act of his / her consciously or unconsciously brings the Institution or any establishment or authority connected with it into disrespect.

1.2 Any act/s by the student which is contrary to the clause (1), shall constitute **misconduct and/or indiscipline**, which include any one or more of the acts jointly or severally, mentioned hereinafter;

1.2.1 Any act of the student which directly or indirectly causes or attempts to cause disturbance in the lawful functioning of the Institution.

1.2.2 The student who is repeatedly absent from the class, lectures, tutorials, practicals and other courses.

1.2.3 The student not abiding by the instructions of the Faculty members and not interacting with them with due respect.

1.2.4 Any student found misbehaving in the campus/class or behaving arrogantly, violently towards the faculty, staff or fellow student.

1.2.5 The Students who is not present for all the class tests, midterm tests, terminal and preliminary examinations.

1.2.6 Permitting or conniving with any person / parent / guardian, which is not authorized to occupy hostel room, residential quarter, or any other accommodation or any part thereof of the Institution.

1.2.7 Obstruction to any student or group of students in any legitimate activities, in classrooms / laboratories / field or places of social and cultural activities within the campus of the Institute.

1.2.8 Possessing or using any fire arms, lethal weapon, explosives, or dangerous substances in the premises of the Institution.

1.2.9 Indulging in any act which would cause embarrassment or annoyance to any student / authority / staff or any member of the staff.

1.2.10 Stealing or damaging any farm produce or any property belonging to the Institution, staff member or student.

1.2.11 Securing admission in the Institution, to any undergraduate or post graduate program or any other course by fabrication or suppression of facts or information.

1.2.12 If the student fails to complete the assignments regularly and has poor academic performance when assessed by the regular class teachers and internal assessment, he/she will not be allowed to appear for the Vidyapeeth examination.

1.2.13 If a student remains absent for lectures, practical or class test and examinations without prior permission of the Principal or the head of the departments, she/he will not be compensated for extra class.

1.2.14 Students should read the notices regularly on notice boards in the academic complex, library and the department notice boards.

1.2.15 Damage of property of the college and its sister institutes like tampering with fixtures, fittings, equipments, instruments, furniture, books, periodicals, walls, windows panels, vehicles etc., will be viewed very seriously.

1.2.16 Recording of any electronic images in the form of photographs, audio or video recording of any person without the person's knowledge; when such recording is likely to cause injury, distress, or damage the reputation of such person; is prohibited in any part of the College and hostel premises. The storing, sharing or distributing of such unauthorized records by any means is also prohibited.

1.2.17 Use of mobile phones and head phones during college hours is prohibited.

1.2.18 As per the rules and regulations of the Dr. D.Y. Patil Vidyapeeth, Pimpri, Pune, 80% attendance in a subject for appearing in the examination is compulsory inclusive of attendance in non-lecture teaching i.e. seminars, group discussion, tutorials, demonstrations, practical's, hospital (tertiary, secondary, primary) posting and bedside clinics etc.

1.2.19 The Students must present in proper dress code with apron/ lab coat, name badge and identity card on all week days /working days and during clinical duties.

1.2.20 Admission of the student will be cancelled at any point of time in case of;

1.2.20.1 Not submitting the required documents on time.

1.2.20.2 Failing to fulfill required eligibility criteria of the program.

1.2.20.3 Submission of fake or incorrect documents.

1.2.20.4 Admission gained by resorting to fraudulent means, illegal gratification or any unfair practice detected at any stage during the entire program.

1.2.20.5 Not paying the stipulated fees on time.

1.3 Prohibition of Ragging:

1.3.1 Ragging in any form is strictly prohibited in the campus and outside. The UGC Regulations on "Curbing the Menace of Ragging in Higher Educational Institutions, 2009" (as amended) and the MCI (Prevention and Prohibiting Ragging in Medical Colleges/ Institutions) Regulations 2009, and DCI Regulations on Curbing the Menace of Ragging in Dental Colleges,2009 shall be applicable to all students of the Vidyapeeth.

1.3.2 It is mandatory to fill the online Anti Ragging undertaking, by every student at the time of the admission and on commencement of every academic year.

1.3.3 Smoking or consumption of alcoholic beverages, or use of banned materials inside the College, Hostel and Campus is strictly prohibited.. Any violation on the part of the students will be viewed very seriously and they will be suspended from the college immediately pending enquiry and in the case of hostellers, they will be expelled from the hostels immediately. Such students will not be permitted to attend classes/sit for examinations and enter the campus without the written permission of the competent Authority.

1.4 Attendance & Progress:

Each student shall always maintain decency, decorum and good conduct, besides keeping steady progress and required attendance. The conduct/ academic performance/ attendance of each student shall be reviewed periodically and appropriate action, including detaining from appearing for the Vidyapeeth Exam/ expelling from the Hostel or College, as the case may be, will be taken against the erring student. The students shall abide by such decision of the authorities of the Institution/Vidyapeeth.

1.5 Payment of Tuition and other Fees

1.5.1 On admission of candidates to the first year of the course of study, all the notified fees viz., annual tuition fee, registration and eligibility fee, health insurance, caution deposit, hostel and mess fee, etc., as applicable, should be paid on or before the prescribed date without fail. Any delay will attract penalty as specified. If any candidate fails to remit tuition fee and other fees within the last date as notified, he/she will forfeit his/her admission to the course concerned.

1.5.2 In respect of subsequent year(s) of study, tuition fee and other specified fees shall be paid on or before the date as notified to the parents/students and on the Notice Board of the Institution /College concerned. Late payment, if any, will attract penalty as specified.

1.5.3 Similarly, examination fee, as prescribed and notified from time to time, shall be paid on or before the due date. If there is any delay, student has to pay penalty as specified. If any student fails to remit the examination fee even after lapse of the period specified for payment with penalty, such student will not be issued Hall Ticket for the Vidyapeeth examination(s)/debarred from appearing in the Vidyapeeth examination(s).

1.5.4 All fees, once paid to the Vidyapeeth account, will not be refunded or adjusted for any other purpose under any circumstances.

1.6 Rules relating to Vidyapeeth examinations:

1.6.1 The candidates appearing for the Vidyapeeth theory examinations shall be under the direct disciplinary control of the Centre Incharge. Possession of cell phone or any electronic device or incriminatory materials by a candidate or found copying from any device in the examination hall, is strictly prohibited.

1.6.2 Disciplinary action will be initiated if any candidate indulges in any malpractice (unfair means) as enumerated in the Vidyapeeth Examination Manual.

1.7 Rules for Hostel Students

All inmates of the Hostel shall observe the following rules for the smooth and efficient running of the hostel and for their comfortable stay:-

1.7.1 Only bonafide students of Vidyapeeth are eligible for admission to the hostels.

1.7.2 Students who fail to remit the Hostel fee even after a reminder in writing, shall vacate the hostel room allotted to them, forthwith.

1.7.3 No posters or pictures should be stuck inside and outside the room or anywhere around the premises of the hostel or College. Hostlers should avoid sticking bills and posters on the windows, doors and walls (except name strips on the room door). In case the room is found not in order, fine will be levied on the erring student.

1.7.4 Inmates should switch off fans and lights before leaving their rooms.

1.7.5 The inmates are advised to close the taps after use in order to avoid wastage of water.

1.7.6 Dining services will be provided only in the mess and there will be no room service.

1.7.7 Whenever any hosteller falls sick the same should be reported by him/her to the warden who will provide all necessary assistance to get appropriate treatment or medicines.

1.7.8 While going out of hostel the students should enter their name in the register & sign the same by mentioning proper reason.

1.7.9 To leave the hostel premises, permission of the Chief Warden is absolutely necessary. Students who want to stay overnight to visit their parents or guardians should approach the Chief Warden for permission. Permission will be granted only after obtaining written request from the parent/guardian duly signed by them, which will be duly entered in a register maintained in each block by the Warden.

1.7.10 All rooms, corridors, toilets etc. must be kept clean and any student who violates the rule shall be expelled from the hostel.

1.7.11 Hostel facility is provided with a view to help the student to pursue his/her studies in good environment and to facilitate/ promote his/her academic progress. A student who fails to keep up the congenial atmosphere and environment in the Hostel or to perform well and maintain academic progress shall not be allowed to use the hostel facility and shall vacate his/her room immediately on intimation from the Chief Warden/ Dean/Principal/Director of Faculties.

All students will be governed by the rules stated above and by those that will be framed from time to time during the academic year.

Failure on the part of the students to abide by the disciplinary rules will result in such punishment including expulsion from the College/Hostel as may be imposed by the Institution / Vidyapeeth / Head of the Institution.

The decision of the Institution/Vidyapeeth/Head of the Institution with regard to disciplinary cases shall be final and all the students shall abide by such decisions.

1.8 Powers of Competent Authority (Dean/Principal/ Director at the Institute level)

The Competent authority may impose any one or more of the following punishment/s on the student found guilty of misconduct, indiscipline, in proportion thereof:

1.8.1 Warning/reprimand

1.8.2 Fine

1.8.3 Cancellation/withheld scholarship / award / prize / medal.

1.8.4 Expulsion from the Hostel.

1.8.5 Expulsion from the institution

1.8.6 Cancellation of the result of the student concerned in the examination of the Institution.

1.8.7 Temporary annulment from the Hostel/ Institution.

1.8.8 Rustication from the Institution.

1.9 Procedure for Inquiry

If the competent authority is satisfied that there is a prima facie case inflicting penalties, mentioned in clause No. 8, the authority shall make inquiry, in the following manner:

1.9.1 Due notice in writing shall be given to the student concerned about his alleged act of misconduct / indiscipline.

1.9.2 Student charged shall be required within 15 days of the notice to submit his/her written representation about such charge/s.

1.9.3 If the student fails to submit written representation within specified time limit, the inquiry may be held exparte.

1.9.4 If the student charged desired to see the relevant documents, such of the documents, as are being taken into consideration for the purpose of proving the charge/s, may at the discretion of the inquiry authority, be shown to the student.

1.9.5 The student charged shall be required to produce documents, if any in support of his defense. The inquiry authority may admit relevant evidence / documents.

1.9.6 Inquiry Authority shall record findings on each implication of misconduct or indiscipline, and the reason for such finding and submit the report along with proceedings to the competent Authority

1.9.7 The competent Authority on the basis of findings, shall pass such orders as it deems fit.

The procedure prescribed above need not be followed, when the student charged admits the charges in writing.

1.10 Appeal

If the punishment/fine/rustication is imposed on a student by Dean/Principal/ Director, such a student shall be entitled to file an appeal before the Vice- Chancellor within thirty (30) days of the receipt of the order.

Calendar of Events for Online Proctor Based AIET - 2023

(Admission to B. Tech. Artificial Intelligence and Data Science Programme & B. Tech. Computer Science & Design Programme)

1	Test Fee	:	Rs. 1000/-	
2	Processing Fee	:	Rs. 300/-	
3	Last date for submitting the application form to- Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune for Online Proctor Based All India B. Tech in AI&DS and B.Tech. CSD (AIET-2023.)	:	• Without late fee :29/03/2023 (Wednesday) Until 5.00 p.m. (Total Rs. 1300/-) • With late fee : 05/04/2023 (Wednesday) Until 5.00 p.m. (Total Rs. 1550/-)	
4	Admit cards to candidates who are considered provisionally eligible for Online Proctor Based AIET - 2023	:	All the candidates who have submitted the online application form are required to download the Admit card online two weeks before the day of Online Proctor Based AIET - 2023	
5	Day, Date & Time of Online Proctor Based AIET - 2023	:	**Sunday, 09/04/2023 From 11.00 a.m. to 12.30 p.m.**	
6	Declaration of Result	:	**Will be notified on the Vidyapeeth Website**	
7	Schedule of Counseling	:	**Will be notified on the Vidyapeeth Website**	
8	Venue of admission sessions	:	Dr. D. Y. Patil School of Science & Technology, Tathawade, Pune - 411 033	
9	College to open on	:	**Will be Displayed on Vidyapeeth Website**	
10	**Fee Structure -**		**General Category**	**NRI / PIO / FN Category**
	B.Tech Computer Science and Design	:	**₹ 1,50,000 /-**	**US $ 2010**
	B.Tech Artificial Intelligence and Data Science	:	**₹ 1,50,000 /-**	**US $ 2010**

The Candidate submitting online application form should also pay processing & entrance fee through gateway payment.

Note - The Processing Fee and the Test Fee is non - refundable.
Results will be displayed on the Vidyapeeth website at **www.dpu.edu.in.** Results of individual candidate will not be communicated on telephone or by post.

***Note -**
The DPU will provide the facility of downloading Admit Cards of All India Online Proctor Based Entrance Test on website:

Fee Structure

Particulars	General Category	NRI/PIO/FN Category
Annual Fees	₹ 1,50,000/-	US $ 2010

Note: Annual Fee includes Tuition Fee, Development Fee and Other Fee
The Annual fee shall be increased by 3% each year
The Annual Fees is to be paid by NEFT / RTGS / Demand Draft in favour of **"The Director, Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, Pune"**, payable at Pune by the student at the time of counseling and issue of admission letter.

Vidyapeeth Eligibility & Registration Fee (one-time Fee):
15% (Fifteen Percent) of the Annual Fee, payable for the first year only, shall be paid by the student separately at the time of filling in the Eligibility Application, as Vidyapeeth Eligibility & Registration Fee. This fee shall be paid by a Demand Draft (DD) Drawn in favour of **"The Registrar, Dr. D. Y. Patil Vidyapeeth, Pune"** payable at Pune.
(Note: The Vidyapeeth Eligibility & Registration Fee is non-refundable)

Hostel Accommodation & Fees for Academic Year 2023-24:
Hostel with Mess Facility are available.

Hostel Fees III Seater Non AC with mess will be notified on the Vidyapeeth **Website: www.dpu.edu.in.**

Vidyapeeth Examination Fees
In addition to the above fees the student shall pay the Vidyapeeth Examination Fee as prescribed by the Vidyapeeth from time to time. Other conditions and formalities shall be as per the Rules of the Vidyapeeth.

Rules for Cancellation of an Admission and Refund of Fees
- Admission to the course can be cancelled at the request of the student, on submission of an application, within time.
- The Student applying for cancellation of the admission on or before the last date of admission, he will be entitled to get refund of fees as per rules notified on the website.

Admission Procedure

1. General

(I) Admissions to all these courses shall be by an All India Biotechnology Online Proctor Based Entrance Text (AIET-2023.) conducted by the Vidyapeeth. The test will be of 1.30 hrs duration and will have 100 objectives multiple choice questions (MCQs) of 1 mark each. The recommended syllabus for this test is appended in this brochure as Annexure - I.

(ii) It shall be the responsibility of the candidate to ascertain the result of the AIET-2023..

(iii) The admission sessions will be conducted through online/ offline counselling by the Dr. D. Y. Patil Biotechnology & Bioinformatics Institute, Tathawade, Pune - 411 033. Failure to report for admission on the scheduled date and time shall result in cancellation of the claim of the candidate to the seat.

(iv) Appearance at the AIET-2023. and inclusion of name in the merit list does not necessarily mean that he/she shall get admission to a course. His/Her admission to a course shall depend upon the availability of seats when his turn comes.

(v) At the time of reporting for admission, the candidate shall produce the documents (original and two sets of photo copies) as listed in 'List of Documents' on the Vidyapeeth website. If the candidate is admitted to a course, these documents shall be retained by the Vidyapeeth. If the candidate fails to produce any of the documents listed in 'List of Documents' on the Vidyapeeth website, his/her claim for admission shall stand forfeited.

(vi) The selected candidate is required to pay the entire amount of fees shown in the Fee Structure on the day of counseling and on-the-spot admission itself. In case the candidate fails to pay the entire amount of fees, he/she may loose his/her claim for admission to that seat.

(vii) If any candidate finds it impossible to be physically present for the admission session due to any unavoidable circumstances, he/she may authorize any other responsible individual to represent him/her for admission session. This representative must carry with him/her the Letter of Authorization for representation in the format given on the Vidyapeeth website as well as all the documents mentioned above. If the candidate or his/her representative fails to report for the admission session, on the date and time mentioned in Important information at a glance, his/her claim for admission to the respective course shall stand forfeited.

(viii) Admissions made at the admission sessions are provisional. These will be confirmed after verification of eligibility by the Vidyapeeth.

2. Instructions for completing the Application Form

2.1 The name mentioned in the form by the candidate should be the same as in the documents of 10+2 examinations.

2.2 An incomplete application form and an application form which is not accompanied by processing and Entrance test fee (add Rs. 250/- for late submission) shall not be entertained and processed. This fee should not be sent by money order. Please note that the processing fee and entrance test fee is non-refundable.

3. Instructions for Applying Online

3.1 Visit http://admissions.dpu.edu.in to apply online.

3.2 Fill in your basic details and click on the Apply Now button.

3.3 You will have your dashboard open in front of you. Also welcome mail containing your login ID and password will be sent on your registered email ID. You can use these details to login lates.

3.4 Fill the application form completely and upload all the required documents.

3.5 Make the fee payment online.

3.6 After completion of entire form with payment, click on 'Submit' button. Your admission form will get submitted.

3.7 After the successful payment of the fees, you will not be able to make any changes in the Application Form.

3.8 On the dashboard, two links for printing Receipt and Application Form will be available. Take printout of both the documents for your reference.

3.9 Link to print Admit Cards will be provided later and you will be intimated on your email ID and also through SMS on your given mobile number.

3.10 If you face any technical difficulty at any step while filling the application form, please mail us on the email ID provided on the dashboard of your login page.

4. Issue of Admit cards

4.1 All the candidates who have submitted the online application form, are required to download the Admit Card online two weeks before the day of Entrance Test. The admit card will indicate the seat number and the examination centre (with its address) allotted to the candidate.

4.2 The candidate shall not mutilate the admit card or change any entry made therein after it has been authenticated by the Vidyapeeth authorities.

5. Mode of the test

The test consists of one question paper. The question paper consists of 100 objective-type questions of 1 mark each on Physics, Chemistry and Maths. The duration of the test is 1½ hours.(25 marks each for Physics & Chemistry and 50 marks for Mathematic subject)

6. Merit List

(i) The Vidyapeeth shall prepare a merit list of the candidates who appear for All India Biotechnology Online Proctor Based Common Entrance Test, in accordance with the total marks obtained by them in Physics, Chemistry and Maths taken together. The candidates shall be called for admission as per their ranking in this list. There shall be no verification of marks or reassessment of papers.

(ii) The merit list will be displayed on the Vidyapeeth website: **www.dpu.edu.in.** sufficient eligible candidates in the merit list will be called for counseling and on-the-spot admission session according to their rank in the merit list.

(iii) Tie-breakers

In case of equal marks at the entrance test, the following procedure shall be adopted for deciding inter-se merit:

First level: A candidate with higher marks in Maths at the entrance test shall be preferred. If the tie still persists, then-

Second level: A candidate with higher marks in Chemistry at the entrance test shall be preferred. If the tie still persists, then-

Third level: A candidate with higher percentage of aggregate marks at the HSC (or equivalent) examination shall be preferred. If the tie still persists, then-

Fourth level: A candidate with higher percentage of aggregate marks at SSC examination shall be preferred.

7. Admission Session

(i) The admission sessions will be conducted at the **Dr. D. Y. Patil School of Science & Technology, Tathawade, Pune.** as per the schedule given in **Calendar of Events** in this brochure. Failure to report for admission on the scheduled date and time shall result in instantaneous cancellation of the claim of the candidate to the seat. It shall be the candidate's responsibility to ascertain the result of entrance test.

(ii) The candidate shall remain present for on the spot admission, as per the schedule given in **Calendar of Events** in this brochure at his own expense.

(iii) Only the candidate and one of his/her parents/guardian shall be allowed into the admission hall. The candidates shall be called in the order of their ranking in the merit list.

(iv) The candidate must note that appearance at the entrance test and inclusion of name in the merit list does not necessarily mean that he/she shall get admission to a course. His/her admission to a course shall depend upon the availability of seats at the time when his/her turn comes.

(v) At the time of reporting for the admission, the candidate shall produce the documents (original and two sets of photocopies) listed in 'List of Documents' on the Vidyapeeth website. If the candidate fails to produce all or any of the above mentioned documents, his/her claim for a seat shall stand forfeited.

(vi) The selected candidate shall be required to submit the affidavit in the format given on the Vidyapeeth website and to pay the entire amount of Annual fees and the Vidyapeeth Eligibility fees, on the day of spot admission. **The annual fees** are to be paid through a NEFT / RTGS / Demand Draft, drawn on a nationalized bank favoring **'The Director, Dr. D. Y. Patil Biotechnology & Bioinformatics Institute, Pune',** payable at Pune. The **Vidyapeeth Eligibility fee** shall be paid in similar manner favoring **'The Registrar, Dr. D. Y. Patil Vidyapeeth, Pune'**. In case the candidate fails to pay the entire amount of fees, he/she may lose his/her claim for admission to that seat.

(vii) If any candidate finds it impossible to be physically present for the admission session due to unavoidable circumstances, he/she may authorize any other responsible individual to represent him/her for admission session. This representative must carry with him/her the Letter of Authorization in the format given on the Vidyapeeth website as well as all the documents listed in 'List of Documents' on the Vidyapeeth website. If the candidate or his/her representative fails to report for the admission session on the date and time mentioned in the schedule of admission, his/her claim for admission to the respective course shall stand forfeited.

(viii) Admissions made at the admission sessions are provisional. These will be confirmed after verification of eligibility of candidates by the Vidyapeeth.

8. Waiting List

(i) A waiting list for admission to the three courses shall be prepared and notified on the Vidyapeeth notice board. The candidates, who desire to have their names included in the waiting list, shall submit their applications for inclusion of their names in the waiting list. If no such application in writing is submitted during the interview, the candidate's name shall not be included in the waiting list.

(ii) The seats, which become vacant during the admission session, shall be kept vacant. The waiting list shall become operative from 1st Aug. 2021 onwards and the candidates in the waiting list shall be offered seats as per availability of seats. The waiting list shall be operative till all the vacant seats are filled or till 30th September (cut-off date), whichever is earlier.

9. Hostel Accommodation

Hostel and Mess facilities **(on payment basis)** are available on the campus for both boys and girls who wish to avail the same. The rooms are well furnished along with the amenities like Internet facility, Doctor on Call, Hot water facility, Central TV room are also available.

10. Ragging

As per the recent UGC Regulations, the affidavits to be filed by the Student and their parent about the anti-ragging regulations of UGC, these affidavits need not be on stamp paper nor need to be registered. On the Contrary they should be submitted by the admitted students by submitting these affidavits on-line. **As per UGC regulations mandatory affidavits should be submitted by all old and fresh students and parents / guardians on the UGC website - www.antiragging.in display the step by step guide on "How to fill an online anti ragging undertaking by the student and parent / guardian".**

11. Disputes

Differences of opinion and disputes arising in the interpretation and implementation of the clauses in this brochure, if any, shall be referred to the Vice-Chancellor and his decision shall be final and binding on all the concerned.

12. Court Jurisdiction

Any legal dispute arising out of the admission procedure of these courses and refund of fees of the Vidyapeeth shall be under Pune jurisdiction only.

13. Warning

The candidate seeking admission to any of the course of the Vidyapeeth, is warned against possible cheating by unscrupulous persons, who may promise an assure seat by extracting large sum of money from the candidate/parent. The Vidyapeeth has not appointed any such agent(s). The Vidyapeeth shall not in any way be responsible for the misdeeds of such person(s).

Academic and Co-curricular Activity

GYTI Awards from President of India

Student Induction Program-2022-23

Parent Teacher Association Meeting

World Environment Day 2022

Har Ghar Tiranga Rally 2022

Educational Visit to Kaas Pathar 2022

National Science Day

SYLLABUS AIBTAIET-21

ANNEXURE - I

PHYSICS

Unit I: Physical World and Measurement

Measurement:- Physics - scope and excitement; nature of physical laws; Physics, technology and society. Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures. Order of magnitude. accuracy and errors in measurement Dimensions of physical quantities, dimensional analysis and its applications.

Unit II: Kinematics

Scalars & Vectors :- Scalar and vector quantities; Position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors.

Unit vector; Resolution of a vector in a plane-rectangular components. Scalar and Vector product of vectors.

Motion in straight lines: - Frame of reference, Motion in a straight line: Position-time graph, speed and velocity. Elementary concepts of differentiation and integration for describing motion .Uniform and non uniform motion, average speed and instantaneous velocity. Uniformly accelerated motion, velocity time and position-time graphs. Relations for uniformly accelerated motion (graphical treatment). Motion in a plane. Cases of uniform velocity and uniform acceleration Projectile motion. Equation of projectile path, time of flight, horizontal range, maximum height of projectile. Relative velocity

Unit III: Laws of Motion

Laws of Motion: - Intuitive concept of force. Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications.

Force:- Types of forces. General idea of gravitation, electromagnetic and nuclear forces. Moment of a force, torque, angular momentum, laws of conservation of angular momentum and is applications. Equilibrium of concurrent forces Centre of mass of a two-particle system, momentum conservation and centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod .

Concurrent Co-planner forces :- Definition of resultant & equilibrant – statement of law of parallelogram of forces - derivation of expression for magnitude & direction of two concurrent coplanar forces – law of triangle of forces & its converse – Lami's theorem – problems.

Uniform circular motion:- Angular displacement, angular velocity and angular acceleration, relation between angular velocity and linear velocity. Dynamics of uniform circular motion: radial acceleration, Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on banked road).

Vertical circular motion due to earths gravitation, equation for velocity and energy at different positions of vertical circular motion. Kinematical equation for circular motion in analogy with linear motion.

Unit IV: Work, Energy and Power

Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power. Notion of potential energy, potential energy of a spring, conservative forces: conservation of mechanical energy (kinetic and potential energies); nonconservative forces: motion in a vertical circle; elastic and inelastic collisions in one and two dimensions coefficient of restitution – problems.

Unit V: Motion of System of Particles and Rigid Body

Motion of rigid body :- Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions. Moment of inertia, radius of gyration. Kinetic energy of rotating body rolling motion, physical significance of moment of inertia, Values of moments of inertia, for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorems and their applications. Angular momentum and its conservation.

Unit VI: Gravitation

Statement and explanation of law of gravitation, definition of G, derivation of relation between g & G. Keplar's laws of planetary motion. The universal law of gravitation. Acceleration due to gravity and its variation with altitude, latitude, depth. Gravitational potential energy and gravitational potential. Escape velocity. Orbital velocity of a satellite. Geo-stationary satellites launching of satellite, expression for period of orbiting satellite.

Brief explanation of inertial mass and gravitational mass, weightlessness condition in orbit.

Unit VII: Properties of Bulk Matter

Elasticity :- Elastic behavior, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity, Relation between elastics constants, Poisson's ratio; elastic energy. Determination of Y ,behavior of metal wire under increasing load, applications of elastic behavior of material.

Friction in solid :- Static and kinetic friction, laws of friction, rolling friction, lubrication.

Frictions in liquid :- Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes). Effect of gravity on fluid pressure.

Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow, critical velocity. Bernoulli's theorem and its applications.

Surface tension :- Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise. Effect of impurity, temperature and detergent on surface tension. capillary action in wick of lamp.

Unit VIII Heat

Gas Laws Statement and explanation of Boyle's Law and Charle's Law, Definition of pressure and volume coefficient of gas, absolute zero, Kelvin scale of temperature, perfect gas equation, explanation of isothermal and adiabatic changes, Van-der-Waal's equation of state for real gases.

Mode of Heat Transfer :- Heat, temperature, Thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv - calorimetry; change of state - latent heat capacity. Heat transfer-conduction, convection and radiation, thermal conductivity.

Radiation :- Newton's law of cooling, Definition of Radiant energy, emissivity and absorptivity, perfect black body, statement and explanation of Kirchhoff's law, Qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law, Plank's law, qualitative explanation of solar constant and surface temperature of sun, principles and working of total radiation pyrometer, Green house effect

Unit IX: Thermodynamics

Thermal equilibrium and definition of temperature (zeroth law of thermodynamics). Heat, work and internal energy. First law of thermodynamics. Isothermal and adiabatic processes.

Second law of thermodynamics: reversible and irreversible processes. Heat engine and refrigerator.

Unit X: Behaviour of Perfect Gases and Kinetic Theory of Gases

Equation of state of a perfect gas, work done in compressing a gas. Kinetic theory of gases - assumptions, concept of pressure.

Kinetic interpretation of temperature; rms speed of gasmolecules; degrees of freedom, law of equipartition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.

Unit XI: Oscillations and Waves

Oscillations:- Periodic motion - time period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion (S.H.M) and its equation; phase; oscillations of a spring–restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum– derivation of expression for its time period.

Sound Wave :- Properties of sound, speed of sound in gas, Newton's formula for speed of sound, Laplace formula, effect of reassure, temperature, humidity and wind on speed of sound.

Definition of sound intensity, explanation of loudness and its unit, distinguish between noise and musical note, comparison of Doppler effect in sound and light.

Wave Motion :- Wave motion. Transverse and longitudinal waves, speed of wave motion relation between speed , velocity and frequency of a progressive wave. Definition of progressive wave & its characteristics, Derivation of equation of a progressive wave & its different forms, definition of wave intensity , mention expression for wave intensity & its unit, Principle of superposition of waves, reflection of waves, Beats, Doppler effect.

Standing wave :- standing waves in strings and organ pipes, fundamental mode and harmonics, effect. Free, forced and damped oscillations (qualitative ideas only), resonance.

Unit XII: Electrostatics

Electric Charges :- Electric Charges; Conservation of charge, Coulomb's law-force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution.

Electrostatic field :- Electric field, electric field due to a point charge, electric field lines, electric dipole, electric field due to adipole, torque on a dipole in uniform electric field. Mechanical force on unit area of the charge conductor, energy density of the medium. Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside). Charged cylinder. Electric potential Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two point charges and of electric dipole in an electrostatic field.

Capacitors :- Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarisation, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor. Van de Graff generator

Unit XIII: Current Electricity

Electric Current :- Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity. Carbon resistors, colour code for carbon resistors; series and parallel combinations of resistors; temperature dependence of resistance.

Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel. Elementary idea of secondary cells. concept of super conductivity – explanation of critical temperature , critical field & high temperature superconductors – mention of uses of super conductors – thermistors & mention of their uses. Definition of emf & internal resistance of a cell – ohm's law applied to a circuit – problems.

Kirchhoff's laws:- Kirchhoff's laws and simple applications. Wheatstone bridge, metre bridge. Potentiometer - principle and its applications to measure potential difference and for comparing emf of two cells; measurement of internal resistance of a cell.

Unit XIV: Magnetic Effects of Current and Magnetism

Concept of magnetic field :- Concept of magnetic field, Oersted's experiment. Biot - Savart law and its application to current carrying circular loop.at hthe centre Magnetic induction at a point along the axis of a coil carrying current, Magnetic induction at a point on the axis of a solenoid,basic concept of terrestrial magnetism, statement & explanation of tangent law, construction & theory of tangent galvonameter, Fleming's left hand rule.

Ampere's law:- Ampere's law and its applications to infinitely long straight wire. Straight and toroidal solenoids, Force on a moving charge in uniform magnetic and electric fields. Cyclotron.

Force on a current-carrying conductor in a uniform magnetic field. Force on a current-carrying conductor in a uniform magnetic field.Force between two parallel current-carrying conductors-definition of ampere. Torque experienced by a current loop in uniform magnetic field; moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.

Magnetism :- Origin of magnetism due to moving charges, equivalence between magnetic dipole and circular coil carrying current, definition of magnetic dipole moment, and its unit, torque acting on a magnet in uniform magnetic field, Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; Earth's magnetic field and magnetic elements.

Types of magnetic material :- Para-, dia- and ferro – magnetic substances, with examples. Ferromagentism on the basis of domain theory, curie temperature Electromagnets and factors affecting their strengths. Permanent magnets.

Unit XV: Electromagnetic Induction and Alternating Currents

Electromagnetic induction; Faraday's laws, induced emf and current; Lenz's Law, Eddy currents. Self and mutual induction. Alternating currents, peak and rms value of alternating current/voltage, Expression for energy stored in the coil, derivation for sinusoidal emf, reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit,

Expression for impendence & current in LCR series circuit by phasor diagram method , explanation of resonance, derivation for resonant frequency, brief account of sharpness of resonance & Q-factor, power in AC circuits with resistance, inductance and capacitance,power factor & wattless current. Qualitative description of choke ,basic ideas of magnetic hysteresis AC generator and construction & working of transformer, power losses in transformer , Principle & working of moving iron meter, explanation of transmission of electric power , advantages of AC & DC

Unit XVI: Electromagnetic waves

Need for displacement current, Electromagnetic waves and their characteristics (qualitative ideas only). Transverse nature of electromagnetic waves. Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses. Space communication, types of propagation of electromagnetic waves in atmosphere.

Unit XVII: Optics

Refraction at plane surface:- Refraction through a glass slab, expression for lateral shift and normal shift, total internal reflection and its applications, optical fibers, its application in communication.

Refraction through prism :- Refraction and dispersion of light through a prism. Prism formula, Deviation through thin prism, angular dispersion, and dispersive power, conditions for dispersion without deviation.

Refraction at spherical surface :-Reflection of light, spherical mirrors, mirror formula. Refraction of light, refraction at spherical surfaces, lenses, thin lens formula, len's maker's formula. Magnification, power of a lens, combination of thin lenses in contact, combination of a lens and a mirror. Scattering of light - blue colour of sky and reddish appearance of the sun at sunrise and sunset. Elementary idea of Raman effect.

Optical instruments :- Human eye, image formation and accommodation, correction of eye defects (myopia, hypermetropia) using lenses. Microscopes and astronomical telescopes (reflecting and refracting) , compound microscope and their magnifying powers , reflecting telescope.

Wave optics:- Brief explanation of Newton's corpuscular theory, Huygen's wave of theory and Maxwell electromagnetic theory, Wave front, wave normal and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's principle.

Interference :- Theory of Interference, conditions for constructive and destructive interference, Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light .

Diffraction :- Distinguish between Fresnel and Fraunhoffer diffraction, diffraction due to a single slit, width of central

maximum, Rayleigh's criteria. Resolving power of microscopes and astronomical telescope.

Polarisation :- Polarisation, plane polarised light, explanation of plane of polarization and lane of vibration, Brewster's law, uses of plane polarised light and Polaroids.

Speed of Light :- Michelson's rotating mirror experiment to determine light importance of speed of light .

Unit XVIII: Dual Nature of Matter and Radiation

Introduction of Atomic physics Types of electron emission, description and theory of Dunnington's method of finding, e/m of an electron, explanation of types of spectra, emission and absorption spectra, brief account of Fraunhoffer lines, explanation of electromagnetic spectra with emphasis on frequency.

Photoelectric effect :- Dual nature of radiation. Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light, photoelectric cell and its application.

deBroglie's hypothesis :- Matter waves-wave nature of particles, de Broglie relation. Davisson-Germer experiment (experimental details should be omitted; only conclusion should be explained). Wave length of electron, principle of electron microscope, scanning of electron microscope, transmission electron microscope and atomic force microscope.

Unit XIX: Atoms & Nuclei

Bohr's atom model :- Alpha-particle scattering experiment; Rutherford's model of atom Bohr atomic model for hydrogen atom , Bhor's Postulates- expression for radius velocity, energy ,wave number ,spectral series of hydrogen ,energy level diagram, explanation of ionization & excitation of energy, limitation of Bhor's theory, explanation of Sommerfeld & vector atom models .

Lasers :- Interaction between energy levels & electromagnetic radiation, laser action, population inversion , optical pumping , properties of lasers, construction & working of Ruby laser,application of laser, brief account of photonics .

Nuclear Physics:- Characteristics of nucleus, Composition and size of nucleus, atomic masses, isotopes, isobars; isotones, qualitative explanation of liquid drop and nuclear magnetic resonance and its application in medical diagnostics as MRI nuclear forces and their characteristics, Mass-energy relation, mass defect; binding energyper nucleon and its variation with mass number; Nuclear fission with equation, Nuclear chain reaction ,critical mass, controlled & uncontrolled chain reactions, types of nuclear reactor , mention their principles, dispose of nuclear waste nuclear fusion. Stellar energy (carbon & proton cycle)

Radioactivity :- Laws of radioactivity, decay law ,explanation of decay constant ,half life period ,mean life, relation between half & mean life, unit of activity ,Bequerrel & Curie – artificial transmutation ,artificial radioactivity , radio isotopes & mention their uses, brief account of Biological effects of radiation & safetymeasures.

Elementary Particles :- basic concepts of decay , neutrino hypothesis, beta leptons & hadrons, Qualitative explanation of it , Quarks.

Unit XX: Electronic Devices

Energy bands in solids Energy bands in solids (Qualitative ideas only) conductor, insulator and semiconductor; semiconductor diode – I-V characteristics in forward and reverse bias, diode as a rectifier; I-V characteristics of LED, photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator. Junction transistor, transistor action, characteristics of a transistor, transistor as an amplifier (common emitter configuration) and oscillator. Logic gates (OR, AND, NOT, NAND and NOR). Transistor as a switch.

Unit XXI: Communication Systems

Elements of a communication system (block diagram only); bandwidth of signals (speech, TV and digital data); bandwidth of transmission medium. Propagation of electromagnetic waves in the atmosphere, sky and space wave propagation. Need for modulation. Production and detection of an amplitude modulated wave.

CHEMISTRY

Unit I: Solid State

Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea). Unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell, packing in solids, packing efficiency, voids, number of atoms per unit cell in a cubic unit cell, point defects.

Electrical and magnetic properties-Band theory of metals, conductors, semiconductors and insulators and n & p type semiconductors , diamagnetism, paramagnetism, ferromagnetism.

Unit II: Solutions (Solution and colligative properties)

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions.

Colligative properties - relative lowering of vapour pressure, Raoult's law, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, van't Hoff factor

Unit III: Electrochemistry

Redox reactions, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), Types of cell - Dry cell - electrolytic cells and Galvanic cells, lead accumulator. EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and emf of a cell, fuel cells, corrosion.

Unit IV: Chemical Kinetics

Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment). Activation energy, Arrhenious equation

Unit V: Surface Chemistry

Types of Adsorption - physisorption and chemisorption, Factors affecting adsorption of gases on solids. catalysis, homogenous and heterogenous activity and selectivity; enzyme catalysis colloidal state distinction between true solutions, colloids and suspension; lyophilic, lyophobic multimolecular and macromolecular colloids; Properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation, emulsion - types of emulsions.

Unit VI : General Principles and Processes of Isolation of Elements

Principles and methods of extraction - concentration, oxidation, reduction - electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron.

Unit VII: p -Block Elements

Group -15 Elements: General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; Nitrogen -Preparation properties & uses ; compounds of nitrogen, preparation and properties of ammonia and nitric acid, oxides of nitrogen (Structure only) ; Phosphorus - allotropic forms, compounds of phosphorus: preparation and properties of phosphine, halides PCl3 , PCl5 and oxoacids (elementary idea only).

Group 16 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties,

Dioxygen: Preparation, Properties and uses, classification of oxides, Ozone, Sulphur -allotropic forms;

Sulphur: Preparation properties and uses of sulphur-dioxide,

sulphuric acid: industrial process of manufacture, properties and uses; Oxoacids of sulphur (Structures only).

Group 17 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens, Preparation, properties and uses of chlorine and hydrochloric acid, interhalogen compounds, oxoacids of halogens (structures only).

Group 18 Elements: General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.

Unit VIII: d and f Block Elements

d Block Elements General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals - metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and properties of K2Cr2O7 and KMnO4.

f Block Elements Lanthanoids - Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences. Actinoids - Electronic configuration, oxidation states and comparison with lanthanoids.

Unit IX: Coordination Compounds

Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, importance of coordination compounds (inqualitative inclusion, extraction of metals and biological system).

Unit X : Haloalkanes and Haloarenes.

(Halogen derivatives of alkanes and arenes)

Haloalkanes: Nomenclature, nature of C -X bond, physical and chemical properties, mechanism of substitution reactions, optical rotation, stability of carbocations R-S and d-I configurations.

Haloarenes: Nature of C -X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only), stability of carbocations R-S and d-I configurations.

Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

Unit XI: Alcohols, Phenols and Ethers

Alcohols: Nomenclature, methods of preparation, physical and chemical properties(of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol.

Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols.

Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses

Unit XII: Aldehydes, Ketones and Carboxylic Acids

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes: uses.

Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

Unit XIII: Organic compounds containing Nitrogen

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.

Cyanides and Isocyanides - will be mentioned at relevant places in text

Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.

Unit XIV: Biomolecules

Carbohydrates - Classification (aldoses and ketoses), monosaccahrides (glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates.

Proteins -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes.

Hormones and Lipids- Elementary idea excluding structure.

Vitamins - Classification and functions.

Nucleic Acids: DNA and RNA

Unit XV: Polymers

Classification - natural and synthetic, methods of polymerization (addition and condensation), copolymerization, some important polymers: natural and synthetic like polythene, nylon polyesters, bakelite, rubber. Biodegradable and nonbiodegradable polymers.

Unit XVI: Chemistry in Everyday life

Chemicals in medicines - analgesics, tranquilizers antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines.

Chemicals in food - preservation, artificial sweetening agents, elementary idea of antioxidants.

Cleansing agents- soaps and detergents, cleansing action.

Unit XVII:Metallurgy-2

Physic-chemical concepts involved in the following metallurgical operations - desilverisation of lead by parke's process-distribution law.Reduction of metal oxides-ellingham diagrams-relative tendency to undergo oxidation in case of elements Fe Ag,Hg,Al,C.Cr,and Mg.Blast furnace-metallurgy of iron-reactions involved and thier role, Role of each ingredient and enegetics .

Unit XVIII: Industrially important compounds

Manufactures of caustic soda by nelson's cell method, ammonia by Haber's process,sulphuric acid by contact process,potassium dichromate form chromite,uses chemical properties of sulphuric acid and potassium dichromate.

MATHEMATICS

Unit I: sets, relations and functions

-Sets and their representation

- Union, intersection and complement of sets and their algebraic properties

- Power set

- Relation, Types of relations, equivalence relations

- Functions: one-one, into and onto functions

- Composition of functions

Unit II: complex numbers and quadratic equations

- Complex numbers as ordered pairs of reals

- Representation of complex numbers in the form a+ib and their representation in a plane

- Argand diagram

- Algebra of complex numbers

- Modulus and argument (or amplitude) of a complex number

- Square root of a complex number

- Triangle inequality-

- Quadratic equations in real and complex number system and their solutions

- Relation between roots and coefficients

- Nature of roots

- Formation of quadratic equations with given roots

Unit III: matrices and determinants

- Matrices

- Algebra of matrices

- Types of matrices

- Determinants and matrices of order two and three

- Properties of determinants

- Evaluation of determinants

- Area of triangles using determinants

Unit IV: permutations and combinations:

- Fundamental principle of counting

- Permutation as an arrangement and combination as selection

- Meaning of P (n,r) and C(n,r), simple applications

Unit V: mathematical induction

-Principle of Mathematical Induction and its simple applications.

UNIT VI: binomial theorem and its simple applications

- Binomial theorem for a positive integral index

- General term and middle term

- Properties of Binomial coefficients and simple applications

Unit VII: sequences and series

Arithmetic and Geometric progressions - Insertion of arithmetic, geometric means between two given numbers

- Relation between A.M. and G.M.

- Sum upto n terms of special series: Sn1. S n2. Sn3

- Arithmetico-Geometric progression

Unit VIII: limit, continuity and differentiability

- Real - valued functions

- Algebra of functions, polynomials, rational, trigonometric, logarithmic and exponential functions, inverse functions

- Graphs of simple functions

- Limits, continuity and differentiability. - Differentiation of the sum, difference, product and quotient of two functions - Differentiation of trigonometric, inverse trigonometric, logarithmic, exponential, composite and implicit functions

- Derivatives of order upto two

Rolle's and Lagrange's Mean Value Theorems - Applications of derivatives: Rate of change of quantities, monotonic - increasing and decreasing functions, Maxima and minima of functions of one variable, tangents and normal

Unit IX: integral calculus

- Integral as an anti-derivative

- Fundamental integrals involving algebraic, trigonometric, exponential and logarithmic functions

- Integration by substitution, by parts and by partial fractions

- Integration using trigonometric identities - Evaluation of simple integrals of the type

Integral as limit of a sum

- Fundamental Theorem of Calculus

- Properties of definite integrals

- Evaluation of definite integrals, determining areas of the regions bounded by simple curves in standard form

UNIT X: differential equations

- Ordinary differential equations, their order and degree

- Formation of differential equations

- Solution of differential equations by the method of separation of variables

- Solution of homogeneous and linear differential equations of the type:

$(dy/dx) + p(x)\, y = q(x)$

UNIT XI: co-ordinate geometry

- Cartesian system of rectangular co-ordinates in a plane

- Distance formula

- Section formula
- Locus and its equation
- Translation of axes
- Slope of a line, parallel and perpendicular lines
- Intercepts of a line on the coordinate axes

Unit XII: three dimensional geometry:

- Coordinates of a point in space
- Distance between two points
- Section formula
- Direction ratios and direction cosines
- Angle between two intersecting lines
- Skew lines
- The shortest distance between them and its equation
- Equations of a line and a plane in different forms
- Intersection of a line and a plane
- Coplanar lines

Unit XIII: vector algebra

- Vectors and scalars
- Addition of vectors
- Components of a vector in two dimensions and three dimensional space
- Scalar and vector products
- Scalar and vector triple product

Unit XIV: statistics and probability

- Measures of Dispersion: Calculation of mean, median, mode of grouped and ungrouped data - - Calculation of standard deviation
- Variance and mean deviation for grouped and ungrouped data
- Probability: Probability of an event
- Addition and multiplication theorems of probability
- Baye's theorem
- Probability distribution of a random variate - Bernoulli trials and Binomial distribution

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