



**SATHYABAMA**  
Institute of Science and Technology

# *An Eye for Excellence*

A Strategic Plan

for

Year 2016 - 2020

A large, stylized graphic of an eye dominates the lower half of the cover. The eye has a black pupil with the year '2020' written in white. The iris is a vibrant blue with white highlights. The eyelids are depicted with thick, dark blue and yellow curved lines. The eyelashes are black and radiate from the pupil. The background of the eye is a lighter blue with some abstract shapes.

**2020**

# FOREWORD

Sathyabama Institute of Science and Technology was established with a mission of taking the technical education standard of this country to the next level. This saga is a celebration of discipline, pride and joy in learning. Faculty enriched with expertise in their areas and Student Community with the intention towards transforming the society for a better tomorrow is the backbone for this family of values. Research in the campus stands as a finest jewel of its achievements in the past decade and the pace of this achievement is a proven history. The creation of the brand "SATHYABAMA" is the consistent effort of countless inspiring individuals from last 27 years. Our institution is repositioning itself to a new focus to address the demands and challenges of the millennial generation with a 2016-20 plan.

Our institution has grown leaps and bounds in strength and stature in the last decade. The institution turns 30 in the year 2018. We are able to witness the fruit of our labor in seeing the pioneering batch and the subsequent alumni batches visiting us Since 2010. Over the years the confidence of the parents and stakeholders have increased to a significant level evident by rising enrollment in admissions, reciprocation from the Alumni in technical and placement front, increasing collaboration from both public and private sector companies and generous funding from the Government agencies.

Key Government agencies, MNC companies and NGO's recognize the institutions relevance in skill based training, performance of and ethical conduct of the Alumni, giving us a attestation of achieving the graduate attributes. Today, our Institution is recognized as the nodal center for various, teaching, research and innovative initiatives.

Teaching across the campus is witnessed as a routine but outstanding exercise adhering strictly to the academic calendar. Success rate for our teaching practice has remained very high due to dynamic course corrections brought from time to time through the industry connect. The various accreditation agencies have given their annual feedback to revitalize the teaching learning process to be at its best. Our campus strives hard to compete with best institutes in India, by disseminating knowledge through social and electronic media.

Employer engagement in the curriculum has also increased significantly with innovative mentoring, internship, and academic proficiency awards instituted in the employers name.

The institution is passionately aware of its social connect to the local community.



22 Schools and 5 Villages in the vicinity of the institution is adopted to increase their technical infrastructure and to bring awareness program on higher education. It is gratifying to note that the influenced community comes back to us for pursuing higher education.

There are several physical manifestation to our growth in capacity building in the last five years. This includes Dr. Jeppiaar Research park housing five Centers of excellence and Technology Business Incubator; International research center which brings strong international collaboration to fruition with stand alone facilities for high end research. New infrastructure for co-curricular and extra curricular activities have increased the synergy of our holistic education.

Financially the institution has struck a balance to realize good stability in the last five years. We are positioning our selves to invest into new verticals both in research as well as new academic programs.

While we are conscious of our growth and justifiably proud of our progress, there is a great quest for us to transcend and transform to the demand of the industrial and social revolution. There are more to be done to engage the great number of learners in STEM (Science, Technology, Engineering and Mathematics) related programmes as the skill sector is rapidly looking for changes with relevance to Industry version 4.0. This gives a massive opportunity for the institution to keep abreast with the changes and demands that the Industry is looking for. The institution plays a key role to understand the changing mind set of the millennial generation and has introduced programs on liberal arts, Humanities and basic sciences apart from the professional courses to aid the social demands.

The Institution is currently planning and proposing to bring structural changes apart from the academic programs to make this place a Temple of learning. We will be prime movers in recognizing and unlocking the talents and preparing individuals to reach their full potential in the next five years.

# Our **VISION** and **MISSION**

The Institution has perceived its vision and mission with a single hearted devotion. Our Vision statement is :



The Institution pursued its vision and mission with a single minded devotion. We envisioned to be and efficient and competent source of technical manpower for the current and future industrial requirements. To that end our mission was four fold; undertaking R & D activities in emerging thrust areas, introducing new man power innovative courses based on the Industry and societal demands. Collaborating with National, international institutes, R & D organizations, Industries and to serve the community at large.

It is gratifying to place on record that we have achieved this Vision with a great resolve and purpose. We have not only stayed relevant in the technical education but also being seen as a significant source of Manpower for industrial needs. Most of the companies have tagged our institution alongside with other MHRD aided institutes of higher learning in offering premium placements. Our students have established a "Niche in the Industry". Mentoring has been the buzz word of our entire teaching process. Our faculty have owned the Vision and Mission to mentor the students to give a holistic perspective and to establish a vital cord of accountability with the Society.

As a Institution, Our Vision for the future is, to be recognized as a valued knowledge partner and a technology mentor both regionally, nationally and Internationally. We will consistently make a difference in the lives of young learners, raising them as effective citizens who will influence their sphere of Society where they serve. True to the expectation of our stakeholders, we have effected major changes in the curriculum for the next five years with reference to Industry 4.0 & Business 4.0. To effect this change, new research facilities will be added, major funding initiatives will be sought from the funding agency, technical man power will be imbibed with professional and higher skill based trainings. On the whole we will embark into a translational research oriented campus for a transformational change in the society. To this end, "SATHYABAMA" will be the choice destination for Young and Adult learners and employers.

# A GLIMPSE AT THE STRATEGIC PLAN FOR 2016-2020

The institute positioned itself to launch several initiatives to bring visibility in academics, research and faculty empowerment. Accreditation, Ranking and Capacity building were the foremost priority in the list of important initiatives envisaged.

## 1. ACCREDITATION:

Our institution will prepare itself to appear for the NAAC accreditation, second cycle by 2016. To this end all the academic course revisions will be done, research publications and project funding will be accessed and monitored to give the thrust needed for the exercise.

## 2. SPACE TECHNOLOGY INITIATIVE:

Under the visionary leadership of the Founder Chancellor, Launching of Sathyabama Student satellite will be attempted in collaboration with ISRO in the proposed PSLV C34 launch. Initiatives will be taken to train a host of Students and Faculty to work onsite at ISRO. The institute will aim to launch the satellite in the year 2016.

## 3. COL.DR. JEPPIAR RESEARCH PARK:

To crystallize several project initiatives taken by center for Drug discovery, Centre for Animal Technology Research, Center for Ocean research its is envisaged by our Founder Chancellor to build a state of the art Research Park which will house all these centers and establish central facility to aid BioSciences based research.

## 4. TECHNOLOGY BUSINESS INCUBATION:

The Institute has been in the practice of working towards patent and product development. To facilitate the process and to encourage technology Incubation, it is desired to house a TBI in collaboration with DST/TIFAC to build an exclusive TBI facility in the research park and to moot the idea of entrepreneurship.

## 5. INTELLECTUAL PROPERTY FACILITATION CELL (IPR):

Having seen new innovations sprouting from the students and faculty research initiative, an IPR facilitating cell will be installed under the banner of International research center.

## 6. BIO SAFETY LABS WITH CLEAN ROOM ISO 7 FACILITY WILL BE ESTABLISHED

exclusively for high end research on Herbal based drug development for Tuberculosis, Dengue and HIV. The institute will invest into the complete infrastructure.



## 7. RESEARCH ADVISORY BOARD:

To enhance the research activity in core areas and to get inputs from leading technologist in our country, the management decided to invite eminent technologist and to constitute a research Advisory Board.

## 8. MASTERS IN DENTAL SURGERY:

Having established a eminent dental college with 100 bedded hospital, the institution envisages to launch Masters program in different specialization based on the demand and request from the stake holders.

## 9. SCHOOL OF LAW:

It is a long felt need and great desire of the Founder chancellor to start School of Law in accordance with our motto 'JUSTICE PEACE AND REVOLUTION'. The Institution aims to launch five year integrated programme in combination with B.Com and BBA. The Institute will apply for approval with Bar Council of India.

## 10. GOING BY THE DEMAND IN BIOSCIENCES

and health sector, the demand for pharmacy program is long felt. Our campus has very good infrastructure for B.Pharm course. Attempt will be made to apply for approval from Pharmacy Council of India.

## 11. SCHOOL OF NURSING:

To Compliment to the ongoing efforts to strengthen the 100 bedded hospital and the dental college, we propose to start a school of Nursing.

## 12. JEPPIAAR IAS ACADEMY:

It is a long cherished dream of our Founder Chancellor to empower students to participate in administrative service. It is desire that IAS academy will be opened for our students to undergo professional training.

## 13. DR REMIBAI JEPPIAR AUDITORIUM:

Fully air conditioned A 1500 seated Auditorium is a long felt need to host several curricular and co-curricular activities.



# STRATEGY PLAN FOR YEAR 2016-20



## I. Transformation education:

It is focused on developing an intentional, aligned and integrated culture that radiates the beliefs, values and life skills in order for the youth to be successful. Transformation Education works because it harnesses an organization's systems, staff, environment and curriculum to provide an enriched and effective milieu for educating the aspiring youth.

Industry 4.0 is the digital transformation of industrial markets (industrial transformation) with smart manufacturing currently on the forefront. Industry 4.0 represents the so-called fourth industrial revolution in discrete and process manufacturing, logistics and supply chain (Logistics 4.0), the chemical industry, energy (Energy 4.0), transportation, utilities, oil and gas, mining and metals and other segments, including resources industries,

healthcare, pharma and even smart cities.

Industry 4.0 is the evolution to cyber-physical systems, representing the fourth industrial revolution on the road to an end-to-end value chain with Industrial IoT and decentralized intelligence in manufacturing, production, logistics and the industry.

Originally Industry 4.0 was conceived in the context of manufacturing, yet this has changed. So, while all these industries fall under the scope of Industry

4.0 and are tackled in the academic, governmental and industrial collaborations which led to 'Industry 4.0'. While it still remains early to speculate on employment conditions with the adoption of Industry 4.0 globally, it is safe to say that skilled workers will need to acquire different or an all-new set of skills.

Our entire curriculum and skill based training will aim to adopt to this digital transformation and will empower the students with experiential learning.



## II. TRANSLATIONAL RESEARCH:

Aiming to be recognized as a I4.0 Campus, some of the verticals we wish to pursue include:

### 1. ADDITIVE MANUFACTURING (AM) & INDUSTRY 4.0

Additive Manufacturing (AM) & Industry 4.0 is the recent move into intelligent technology automation. In this new era the use of modern skills of Additive Manufacturing within the context of information technology integration plays an important role in industrial economic competitiveness. As can be seen, there's no doubt that 3DP technologies are leading to the next major industrial revolution. Due its versatility the Additive Manufacturing plays a key-role in the Industry 4.0, saving time and costs, being decisive for process efficiency and reducing its complexity, allowing for rapid prototyping and highly decentralized production processes. Currently, more and more industrial segments are adopting AM. The smart factories of the future have all processes interconnected by the Internet of Things, incorporating greater flexibility and individualization of manufacturing processes is an appropriate name to describe the technologies that build 3D objects by adding layer-upon-layer of material, whether the material is plastic, metal, concrete or one day.....human tissue. Common to AM technologies is the use of a computer, 3D modeling software (Computer Aided Design or CAD), machine equipment and layering material. Once a CAD sketch is produced, the AM equipment reads in data from the CAD file and lays downs or adds successive layers of liquid, powder, sheet material or other, in a layer-upon-layer fashion to fabricate a 3D object.

The term AM encompasses many technologies including subsets like 3D Printing, Rapid Prototyping (RP), Direct Digital Manufacturing (DDM), layered manufacturing and additive fabrication. AM application is limitless. Early use of AM in the form of Rapid Prototyping focused on preproduction visualization models. More recently, AM is being used to fabricate end-use products in aircraft, dental restorations, medical implants, automobiles, and even fashion products.



Industry 4.0 is the digital transformation of manufacturing, leveraging third platform technologies, such as Big Data/Analytics and innovation accelerators, such as the (Industrial) Internet of Things, and enabling the convergence of IT (Information Technology), OT (Operational Technology), robotics, data and manufacturing processes to realize connected factories, smart decentralized manufacturing and the digital supply chain in the information-driven cyber-physical environment of the fourth industrial revolution.

## 2. CYBER PHYSICAL SYSTEMS:

Industry 4.0 is the recent move into intelligent technology automation. In this new era the use of modern skills of Additive Manufacturing within the context of information technology integration plays an important role in industrial economic competitiveness. This short review provides a basic understanding of the role of 3DP technology in the Industry 4.0. As can be seen, there's no doubt that 3DP technologies are leading to the next major industrial revolution. Due its versatility the Additive Manufacturing plays a key-role in the Industry 4.0, saving time and costs, being decisive for process efficiency and reducing its complexity, allowing for rapid prototyping and highly decentralized production processes. Currently, more and more industrial segments are adopting AM. The smart factories of the future have all processes interconnected by the Internet of Things, incorporating greater flexibility and individualization of manufacturing processes.

## 3. BIG-DATA-DRIVEN QUALITY CONTROL:

In engineering terms, quality control aims at reducing the inevitable variation between products. Quality Control depends to a large extent on statistical methods to show whether a specific feature of a product (such as size or weight) is changing in a way that can be considered a pattern. Of course such a process depends largely on collecting real-time or historical data regarding the product.

## 4. ROBOT ASSISTED PRODUCTION:

The entire basis of the new industry relies of the smart devices being able to interact with the surrounding environment. This means smart devices equipped with cameras, sensors, and actuators that are able to identify the product and then deliver the necessary changes for it. Consequently, "robot coordinators" will become an active component of Production.

EXHIBIT 1 | Nine Technologies Are Transforming Industrial Production



Source: BCG.



## 8. NEXT GENERATION LABORATORY:

Merging the virtual and the real world. Employing Virtual reality, Augmented Reality, Mixed Reality and Automation

Developing a new product, planning a new plant, or producing with the help of digital tools creates a detailed virtual image, the digital twin. The digital twin creates new insights, thanks to the combination of physics-based simulations with data analytics in a fully virtual environment. This makes possible to realize innovations faster and more reliable, while also requiring significantly fewer real prototypes. Even more data are created when the product is being produced or a plant begins operation. These performance data of the real production and of the real product can be collected, analyzed, and fed back into development. Here they help to improve and optimize new products and processes at an early stage.



A translational research center encompassing all these initiatives is envisaged to give impetus for a I 4.0 based eco system. The facilities, manpower, student initiatives will revolve around these initiatives.

## 9. PARTNERSHIPS WITH INDUSTRY, & ACADEMIA NATIONALLY AND INTERNATIONALLY:

To realize the above mentioned verticals, continuous engagement with industry and leading institutions is inevitable. One way to explore this engagement is to show our resolve in setting up basic facilities so that the topping up will happen as a serious collaboration. Our institution will also take the lead role to initiate the seeding process and groom the interaction to maximize the collaboration for maximum visibility of the stakeholders.

## 10. CONSULTANCY PROJECTS:

There are several stand alone facilities which are unique of our campus, where both leading academic institutions including IIT Chennai, CMC Vellore, Sankara Nethralaya come for collaboration and consultancy engagements. We will maintain our interaction and ambience in the same measure to invite wider interaction with industry in all sectors and specializations. There are several stand alone facilities which are unique of our campus, where both leading academic institutions including IIT Chennai, CMC Vellore, Sankara Nethralaya come for collaboration and consultancy engagements. We will maintain our interaction and ambience in the same measure to invite wider interaction with industry in all sectors and specializations.

## 11. ADVANCED TECHNOLOGIES AND CENTERS OF EXCELLENCE:

Measures are currently underway to contextually reassert ourselves to the new technological demands. Accordingly, new and major facilities pertaining to Additive manufacturing, Cyber physical systems, IoT, Artificial intelligence, Biomedical engineering, Nanotechnology, Communication systems will be our specific goals. We would have a hand holding with industries such as SEIMENS, WIPRO-GE, Electro Optical Systems(EOS) to realize such initiatives. To this end, we will also involve in generating funding in collaboration with major universities, companies across the Globe to meet this challenge.

## 12. INNOVATION AND START UPS:

The culmination of the above perspectives is to groom newer indigenous technologies, validated and implemented by national and international research partners both from academia and Industry. Hence our thrust will be on innovation, to provide the right eco-system from the first year onwards, so that Innovation will not be compartmentalized but becomes a part of the learning practice and perspective. This culture hopefully will affect the accountability factor and relevance to the society.

## III. TRANSCENDING QUALITY:

Because excellence isn't a measure, or a statistic, or a check box on a check list. Excellence is a feeling. Excellence is a moment. If we chase only quality to a degree that we lose sight of excellence, we fail our stakeholders. Excellence is challenging yourself to ensure quality.

Our institution will pursue excellence in all areas of curriculum and research listed above. Sathyabama Institute of Science and Technology has added several achievements and accolades to its 27 years of existence and for its excellence in creating a society that is humane, inclusive and beneficial to all. We make sure the benefits of education reach out the students with different abilities and needs.

Its our pleasure being the driving force for the students in guidance and assistance to achieve both academic and personal goals. we focus primarily on grooming the students and enhancing their academic and inter personal skill sets and finally making them a wise human being.

Faculty members are the life line of any educational institution, their involvement in academic and research activities is of paramount importance for the success of the institute. Research is the most significant part of the academic career of any faculty.

"None of us is as strong as all of us". Students' success and their well-being will always remain the most important priority of Sathyabama Institute of Science and Technology.

# MONITORING MECHANISM OF THE STRATEGIC PLAN FOR 2016-20



1. To initiate the Accreditation process, a coordination committee will be step up with the Vice Chancellor as the Head and the SSR preparation will be monitored and appraised.



2. Satellite launching will be Kick started by the Founder Chancellor, a coordination committee under the leadership of Dr Sheila Rani will liason with ISRO to stream line the coordinates.



3. Director admin will oversee the construction and installation of the Research Park.

4. Director research will liaison with DST to set up IPR cell. Necessary approvals will be sought from the funding agency.



5. Dean of dental college will do the necessary document submission for the approval of MDS programme and for subsequent inspection by the Dental council of India.



6. The registrar will Contact Bar council of India to take approval for starting the Law courses.

## SPECIFIC INITIATIVES:

### 1. SKILL TRAINING AND SKILL BASED COURSES:

In the 2016-20 plan, Centre for Skill development was launched and over 2200 students and learners have benefited through number of certification courses and programme. Certification programmes in modern analytical methods, production and manufacturing skills will be initiated through apprenticeship programmes for industry demanding skill opportunities. We will further encourage technology business commercialization programme for the skill trained learners to plunge into entrepreneurship world

### 2. SWAYAM COURSES:

The institute is already a distinguished platform for initiating courses offered by Swayam/MOOC platform. For the last three years we have enjoyed the AAA and AA status in crediting the courses. This has caused ripples in our teaching methodology since the faculty conduct followup courses, awareness workshop based on the courses credited by NPTEL. Knowledge dissemination is exponentially growing as a result of our engagement. IN the next five years we hope to see a minimum of 40% students credit extra courses from the Swayam platform. Our campus will become a flagship for the NPTEL courses. We will also strive to become part of the resource group for the swayam courses.

### 3. DUAL DEGREE COURSES:

Subject to the approval from the UGC, the institution will strive to establish a steady flow of outbound and inbound students to engage in dual degree programmes so as to maximize the learning options and to have a Global perspective in the credited courses. This can be viewed as a major input for inter-disciplinary learning practices along with industry exposure and endorsement.

### 4. ALLIED HEALTH SCIENCES PROGRAMMES:

Our institution has made a steady progress in truly become a melting pot for all the professional courses in order to bring a grand fusion between Engineering, Medical, Management disciplines. We have been successful in part and complete the cycle, we have launched Dental, Pharmacy already and we would strive to start Nursing and other allied health sciences /paramedical courses to complement the existing programmes.

### 5. ACCREDITATION AND RANKING:

Having launched all major initiatives in redressing teaching learning process and teaching learning resources, we look forward to empower ourselves with all approvals mandatory and optional to place ourselves as a leading institute in the national and international formats.

Our desire is to be in par with MHRD funded technical institutes nationally and among Top 500 Universities , Globally. This is our quest and we will press towards this milestone.

## SPECIFIC INITIATIVES:

### 6. SMART AND GREEN CAMPUS:

The institution will continue to strive to be a campus of eminence in providing infrastructure commensurate to a smart campus adhering to green campus initiatives, to reduce the carbon factor, provide introduce newer technologies to combat Solid waste management to the already existing methods, More wifi enabled student activity zones to enhance the club activities. To sustain the machinery installed for high end research the campus will aim to install a 33 kVA Electrical substation so that 24 x 7 research activities can be supported ably.

### 7. FACILITATING INTERNATIONAL STUDENTS AND PEERS ENGAGEMENT:

To the already existing presence of foreign students and visiting research Scholars, the institution is revamping the infrastructure with modernized accommodation and food facilities to suit the international visitors. We will continue to enhance the number of visiting scholars, students, and Professors with other supporting schemes and amenities to make the campus the preferred destination for the visitors.

### 8. SOCIETAL ENGAGEMENT:

The institution already enjoys the patronage as a preferred choice for many of the Government, and NGOs schemes to align their societal and CSR activities. To name a few; the Tamil Nadu state Government for the two consecutive years held their Teachers and Students month long training for orienting them for NEET exam. The institution took the entire logistics and did it with clinical precision. NGOs such as Anbu Foundation, IT sector company such as Cognizant Technology Solutions, Defense/ Space research establishment such as DRDO/ ISRO continue to choose our institution for several of their initiatives. We will align with more primary health care centers to install oral hygiene check up centers, empower physically disabled, war widow children, first generation graduates. We will strive to set up a community radio to influence Tsunami victims in their rehabilitation centre with more social awareness programme.

