



P.E.S. College of Engineering, Mandya - 571 401, Karnataka

[An Autonomous Institution affiliated to VTU, Belagavi,
Grant – in – Aid Institution (Government of Karnataka), World Bank Funded College (TEQIP), Accredited by NBA,
NAAC and Approved by AICTE, New Delhi]

STRATEGIC DEVELOPMENT PLAN (SDP)



2021-2026

“Professionally Excellent Socially Committed Engineers”

STRATEGIC DEVELOPMENT PLANNING

State the Vision and Mission of the Institute

Vision:

“PESCE shall be a leading institution imparting quality engineering and management education developing creative and socially responsible professionals”.

Mission:

- Provide state-of-the-art infrastructure, motivate the faculty to be proficient in their field of specialization, and adopt best teaching-learning practices.
- Impart engineering and managerial skills through competent and committed faculty using outcome-based educational curriculum.
- Inculcate professional ethics, leadership qualities, and entrepreneurial skills to meet societal needs.
- Promote research, product development, and industry-institution interaction.

Quality Policy

“Highly Committed in Providing, concurrent technical education and continuously striving to meet expectations of stake holders”.

The vision and mission statements are communicated to all the staff, students, parents, and stakeholders through the institute website, brochure, induction program, back cover page of blue books, Lab records, and institute magazine. These statements are also displayed at prominent places inside the campus.

Values:

Professionalism

Empathy

Synergy

Commitment

Ethics

Availability of the Institutional Strategic Plan and its Effective implementation and Monitoring:

Overview:

Strategic Development planning is a continuous process with a specific focus on accomplishing long, mid, and short-term goals. However, Strategic Development Planning always considers the available resources and the present environment of the institution. Strategic Development Plan (SDP) analyses the current environment and

expected future scenarios and envisages the future direction of the institution. Strategic plan identifies the means of achieving vision, mission, and quality policy while practicing core values.

The primary portion of the Vital Advancement arrangement is setting stakeholder's desires, and returning to Vision, Mission, and Core Values working to bring out a great quality approach. These are accomplished through many deliberations with Stakeholders (administration, authority, HoDs, faculty, students, alumni, professional associations, industry, and parents). The ultimate result from these gatherings is discussed and endorsed by the Board of Governors (BOG).

Scientific scanning of the internal and external environment is done through a SWOT exercise. After filtering the environment, institutional high-level objectives were set up and methodologies and sub-strategies to arrive are accomplished. Based on institutional strategic goals (ISG), key execution regions are recognized and particular targets were set for each. The method of implementation is worked out and circulated to all the departments.

It is exceedingly exhilarating to note that most of the inputs are drawn from Stakeholders which are the testimony to the team participation process. The Strategic Development Plan will improve the capability of the PES College of Engineering in delivering fruitful results. The institution will no question grow and be a torch bearer in providing technical education for many decades to come, in this manner leading to achieving its stated mission and vision.

During the formulation of the first SDP 2014-20, lot of efforts had been exercised in bringing out a quality plan document. This helped in preparing the second edition. Industry interaction has improved. More research papers are getting published every year. Institute obtained NAAC B++ grade certification. Six undergraduate departments received NBA accreditation. Good rankings in NIRF are also an achievement. This is a great sense of satisfaction for the institution. With this accomplishment, the SDP manual for 2021-26 is prepared.

About P E S College of Engineering, Mandya:

P.E.S College of Engineering (PESCE) is one of the premier engineering colleges in the state of Karnataka, started in the year 1962. PESCE is committed to providing quality technical education and has created a mark for itself over the years with outstanding achievements of faculty, students, and alma mater. The college is functioning under the Grant-in-aid scheme of the Government of Karnataka. The institute

is permanently affiliated to Visvesvaraya Technological University (VTU), Belagavi. PESCE obtained academic autonomous status in the year 2008 by UGC. It is recognized by the All India Council for Technical Education (AICTE), New Delhi. The college was selected under TEQIP (Phase-II &Phase-III) World Bank financial assistance scheme.

Table10.1.2.1 List of Undergraduate and Postgraduate programs

Undergraduate Programs		Postgraduate Programs	
Sl No.	Name of the Program	Sl No.	Name of the Program
1.	Automobile Engineering	1.	Master of Computer Application (MCA)
2.	Civil Engineering	2.	Master of Business Administration (MBA)
3.	Computer Science and Engineering	3.	M. Tech in Computer-Aided Design in Structures
4.	Computer Science and Engineering (AI & ML)	4.	M. Tech in Computer Science and Engineering
5.	Computer Science and Engineering (CSBS)	5.	M. Tech in VLSI and Embedded Systems Design
6.	Computer Science and Engineering (CSDS)	6.	M. Tech in Machine Design
7.	Electrical and Electronics Engineering		
8.	Electronics and Communication Engineering		
9.	Information Science and Engineering		
10.	Industrial Production and Engineering		
11.	Mechanical Engineering		

P.E.S. College of Engineering, Mandya has secured 137th NIRF rank in the year 2022 against 139th in 2021, 147th rank in 2020 and 161st rank in 2019. The institution is ranked in the band 151-200 (NIRF) among Engineering colleges in India and band 11-50 (TOP 11-50 institutes in HEIs) in 2023, The institute placed in the Top 3 in Karnataka and 1st among government / Aided colleges. Currently, more than 3200 students are receiving quality technical education. There are 198 distinguished faculties out of which 64 faculties have the highest qualification with a Ph.D. degree. The staff members are

highly qualified and well experienced. The teaching-learning process comprises of interactive teaching, project-based research, coaching, counseling, and mentoring.

The College has the best green campus with state-of-the-art teaching facilities viz., spacious classrooms, laboratories, sports complex, multimedia facilities, and a well-stocked digitalized library. Each department is housed independently with well-maintained laboratories having the latest sophisticated equipment which caters to the practical needs of the students.

Research Programs:

The College has got well-established research centers. All the departments have got recognition as research centers from VTU Belagavi, where faculties and students are doing their research for M.Sc. (Engineering) by Research and Ph.D. programs.

The University of Mysore has recognized the PET research center to carry out research for M.Sc. Engineering-by-research and a Ph.D. degree in the field of Computer Science, Electronics, Mathematics, Physics, Commerce, Chemistry, Master of Business Administration and Master of Computer Applications. Around 187 research scholars from various Institutes of Karnataka have registered and are actively involved in research work for the Ph.D. degree. So far, around 149 research scholars have been awarded Ph.D. degrees. There are many sponsored ongoing research projects supported by UGC, DST, VGST, and AICTE. The total funds received by our college exceed Rs 3.5 Crores.

Centers of Excellence:

Centre of Excellence is a facility with the necessary infrastructure to enhance the skills of the students and staff. These centers provide ample opportunity for the students and staff to comprehend the latest industry practice and upgrade their knowledge through industry-relevant projects using these facilities. The Institution has seven Centre of Excellence as shown in the below Table:

SI No	Department	Centre of excellence
1.	EC	VLSI Design Laboratory
2.		Medical Image Processing Laboratory
3.	E&E	High Voltage Insulation Laboratory (HVIL)
4.	Civil	Centre for Alternative Energy Resource (CAER)
5.	CS	Internet of Things (IoT)
6.	IS	Network Forensics.
7.	ME	Centre for Diagnostic Maintenance (CDM)

Each Centre of Excellence has been described briefly in the below paragraphs:

1. VLSI Design Laboratory: (E&C Branch)

VLSI design laboratory established in 2010-12 funded by VGST, Government of Karnataka. The facility is used to conduct regular training programs for UG, PG students, research scholars and faculty members from our institution and other academic institutions who want to improve their knowledge and practical skill in VLSI design and embedded system. These facilities are also used by the students of other colleges on request as a part of consultation.

2. Centre for Diagnostic Maintenance (CDM) (ME Branch)

In recent times Condition-Based Maintenance (CBM) and Prognostics has emerged as a significant technology that is making an impact on industrial maintenance practices. CBM technology is characterized by the merging and strong coupling of interdisciplinary trends. All the diagnostic and prognostic technology elements, techniques and capabilities must be applied and implemented wisely to obtain maximum benefit impacts. These facilities are used by the UG, PG and Research students/Scholars of our and other Institutions for carrying out experimentation/ Project/Research work.

3. Medical Image Processing Laboratory (E&C Branch)

The facilities/services available are High end work stations with high resolutions monitors (desktop computers), MATLAB software-version 15.B, Teaching Aid Interactive Panel, Network Accessories Router Cisco 1905. Work being carried in the areas; Diabetic Retinopathy, Retinopathy of Prematurity, MRI image segmentation algorithms and Medical Image Denoising. The activities such as, to study the various medical image modalities like XRAY, CT- Scan, MRI, mammograms etc., and to compare their relative merits and demerits as well as applications.

4. High Voltage Insulation Laboratory (HVIL) (EE Branch)

Facilities/ services available in the laboratory consists of shielded chamber based on Faraday Cage Principle, Vacuum system with high pressure chamber, High Frequency High Voltage Generator, Aplab 30MHz Dual Trace Oscilloscope, PD free High Voltage generation Unit. Electric Power Systems comprises a large number of power equipment's like generators, HV

motors, transformers, cables which are quite expensive and form the significant portion of plant assets. However, the reliability of these equipment depends to a large extent on the healthy condition of their insulation. Failure of the insulation directly or indirectly will result in failure of power equipment which in turn results in forced outages, reduced reliability and increased maintenance and repair costs. Page 47/111 11-01-2018 05:32:23 Self Study Report of P. E. S. College Of Engineering, Mandya

5. Centre for Alternative Energy Resource (CAER) (CV Branch)

This facility caters for, awareness on Rain Water Harvesting and Bore well recharging techniques, Global and Bio Gas production using Kitchen waste. Encouraging various research activities in the entire Bio fuel chain involving universities and research organizations (UG students project program)

6. Internet of Things (IoT) Laboratory (CS Branch)

The laboratory is used for development boards compatible with Arduino platform, microchip chip kit platform and Zolertia boards, Raspberry PI boards for embedded and sensor networks and HP Intel core duo systems. Lab is dedicated for doing project and research oriented work.

7. Network Forensics (IS)

Network forensics is a sub branch of digital forensics relating to the monitoring and analysis of computer network for purposes of information gathering, legal evidence and intrusions detection, to carry out the project and research oriented work

Strategic Development Plan Process Diagram:

Figure 10.1.1 depicts the Strategic Development Plan Process followed in formulating the institutional strategy for the period of 2021-2026.

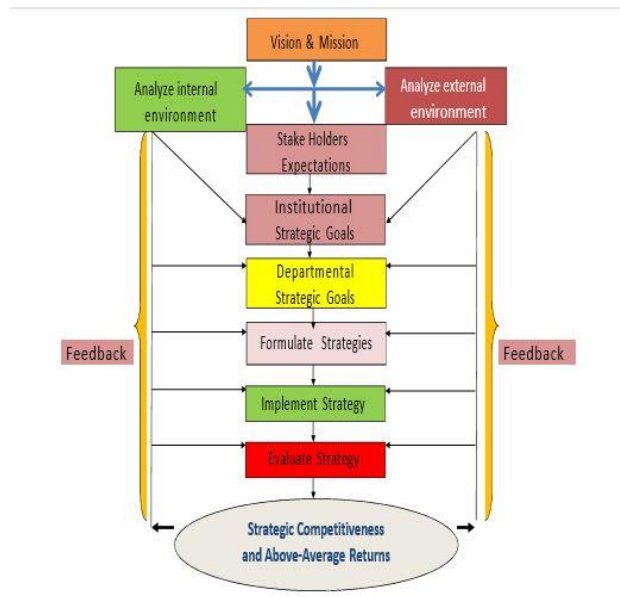


Fig: 10.1.2.1 Strategic Development Plan Process Diagram

Institutional strategic goals formed the main theme for arriving at strategies to achieve them and sub-strategies for the implementation plan.

Stake Holders Expectations:

Management	<ul style="list-style-type: none"> • Brand • Growth of the Institution • Social Service
Leadership Team	<ul style="list-style-type: none"> • Committed Management • Best Faculty • State of the art infrastructure • Academic Excellence
Faculty & Staff	<ul style="list-style-type: none"> • Professional Growth • Best compensation & benefits • Good Students input
Students	<ul style="list-style-type: none"> • Best teaching-learning • Training & placements / • Incubation and Start-ups • State of the art infrastructure
Parents	<ul style="list-style-type: none"> • Disciplined and well-developed graduates • Holistic development of students • Training & placements
Industry	<ul style="list-style-type: none"> • Highly Skilled-employable students • Critical thinking & Problem-Solving skills • Soft skills
Society	<ul style="list-style-type: none"> • Responsible citizen • Service orientation

Fig: 10.1.2.2 Expectations of Stake holders

External Environment Analysis:

Economic Factors: The GDP of the country determines the job market and the number of students getting placement. If Placements get affected; this will have a direct bearing on admissions, particularly management quota.

Social Factors: Large parenting community is focusing on job-oriented courses only but not on real education. This may pose a great danger to pursuing quality learning on the part of the student. Only placement-focused learning may dilute academic standards.

Technological Factors: The use of technology in teaching-learning may have to be extensively used for higher effectiveness, meeting competition, and saving time. Syllabus review to match concurrent technologies needs a re-look at the curriculum revision on a periodical basis. Emerging technologies are posing challenges in training faculty with the latest changes happening in the industry. E-learning /online learning/online examination may replace traditional classroom teaching-learning practice in the near future.

Political Factors: Political factors at the state level looked more stable and not many changes due to this factor. However, clarity on admission policy from the government could be a challenge. Higher education is getting a big priority in political decision-making.

Regulatory Factors: Regulatory factors are stable. PESCE, Mandya is autonomous, and currently affiliated with VTU. The institution must be geared up to meet the proposed New National Education Policy framework.

Market /Competition Factors: Many Deemed /Private state universities /Industry lead universities/engineering colleges are getting started in our state as well as many states. In other states, the inflow may be less and may affect admissions.

Institution-Internal Environment Analysis: SWOT

Strengths	Weakness
<ul style="list-style-type: none"> • Committed management • Brand name • Infrastructure • Decades of Expertise • Aided & Autonomous Institution • Eminent Faculty with (35 % Ph.Ds) • Research Expertise • TEQIP and Research Grants • Ranked among top 200 in NIRF • NBA & NAAC Accreditation • Green Campus & sports complex 	<ul style="list-style-type: none"> • Rural based students • Industry interaction • Educational ERP implementation • Placements in core engineering branches and product-based companies • Social Media presence
SWOT	
Opportunities	Threats
<ul style="list-style-type: none"> • University status • Incubation & Start-ups • Innovative teaching & learning • MOUs/Collaborations • Starting of New Courses in Engineering • Global initiatives • Use of Latest Technology • Upgrading faculty through QIP 	<ul style="list-style-type: none"> • New Emerging technologies • Entry of Foreign Universities • Competition from Private Universities • Admission of quality students • Government / University Policies

Fig: 10.1.2.3 SWOT analysis of Institution-Internal Environment

Critical Success Factors analysis has been discussed in detail and the following factors have been identified;

- Best quality student attraction
- Best teaching-learning practices
- Best placement opportunities
- State-of-the-art infrastructure
- Industry- institute interface collaboration
- Research, Incubation, Innovation, and Start-ups
- Starting of new programs in emerging areas

Institutional Strategic Goals (ISG) (2021-2026):

Institutional Strategic Goals Leadership Team having brainstormed vision, mission, quality policy, core values, environmental factors, and SWOT analysis, the mentioned high-level goals have been identified (HLG) which are also called Institutional Strategic Goals (ISG).

ISG 1. Associations with industry

- Creation of Associations with industry by utilizing the resources and expertise.
- Set up laboratories to pursue research with some of the reputed industries.

ISG 2. To Provide the State-of-the-Art Infrastructure Facility

- Develop infrastructure for carrying out R&D activities.
- Academic infrastructure has to be strengthened further.
- Strengthen campus-wide networking.
- Modernization of laboratories.

ISG 3. To have 70% of Faculty with Ph.D. qualifications.

- Encourage faculty to register for Ph.D.
- Support faculty already registered to accelerate the work and complete their Ph.D.
- Recruitment of faculty with Ph.D. from premier Institutions in specialized areas/industry expertise.

ISG 4. To introduce new UG and PG Programs and enhance the intake of existing programs

- Explore the possibilities of adding new UG and PG programs (based on the availability of resources and industry demand).
- Enhance intake across programs depending on the demand.

ISG 5. To facilitate students to become Entrepreneurs (Incubation Centre)

- Conduct Business Plan and Idea Competition.
- Encourage more campus companies to provide start-up opportunities for our students.
- Provide the necessary infrastructure for incubating the ideas.
- Bring in mentors to handhold the students with innovative ideas.
- Provide the seed fund to develop a prototype.

ISG 6. To make use of Technologies for providing Skill sets and additional Self-Learning.

- Adopt digital learning, e-learning solutions, and interactive sessions.
- Encourage self-learning techniques.
- Adopt blended learning to maximize student learning.

ISG 7. To Collaborate with Foreign/National Institutions of Higher Learning and Research Organizations

- Collaborate with reputed Foreign Universities/Institutions.
- Faculty exchange programs.
- Partnership programs.
- Collaborate with Universities/Institutions of repute for research activities.
- Best practices from reputed academia & industry to bring holistic learning experiences.

ISG 8. Strengthening the conduction of social activities

- The College plans to increase the conduction of social activities to create strong connectivity with the neighborhood community through various departments and committees of the college.

Key Performance Areas and Targets:

The Strategic Development Plan has set the targets or goals for infrastructure, Faculty Excellence, Student intake, Internationalization, Branding, Accreditations, Research, Collaboration, Financial sustainability, etc., which also illustrate the ways of achieving the targets and goals over the timeline. A team of Senior Professors involved in monitoring the implementation of the Strategic Development Plan. The progress in the achievement of the targets is reviewed periodically. The strategic development plan is given in Table 10.1.2.2 through Table 10.1.2.5

Table 10.1.2.2: Strategic Development Plan for Infrastructure

Academic Years		2021-22	2022-23	2023-24	2024-25	2025-26
Sl. No.	Key Performance Area(KPA)	Progressive Enhancement Targets (PET)-Year-Wise				
1.	Supporting infrastructure for the Introduction of new UG&PG courses	UG-1	UG-1	UG-1	PG-1	PG-1
2.	Innovation and Incubation Centre	Initiate approval And construction	Completion of construction	-	-	Planning for Expansion of centre
3.	e-Governance	Software for managing the T&L process	Fee payment and Exam automation	Office automation	Continuous improvement	

Table 10.1.2.3: Strategic Development Plan for Teaching–Learning, Accreditation and Rankings

Academic Years		2021-22	2022-23	2023-24	2024-25	2025-26
Sl. No.	Key Performance Area (KPA)	Progressive Enhancement Targets(PET)-Year-Wise				
1.	NIRF	Within 150 ranking	Within 150 ranking	Within 150 ranking	Within 100 ranking	Within 100 ranking
2.	ARIA	Band Performer	Band Performer	Band Excellent	Band Excellent	Ranked
3.	Professional Society tie-up	1/Dept.	1/Dept.	1/Dept.	1/Dept.	1/Dept.
4.	Innovative Teaching & Learning	Enhance and improve	Enhance and improve	Enhance and improve	Enhance and improve	Enhance and improve
5.	Outcome-based	Enhance and	Enhance and	Enhance and	Enhance and	Enhance and

	Education	improve	improve	improve	improve	improve
6.	NBA	CSE and IP	Renewal of NBA– ECE, Mech, Civil, ISE,EEE, New: MCA and MBA	1M.Tech program	CSE and IP renewal	-
7.	NAAC	AQAR	AQAR	AQAR	AQAR	AQAR
8.	Involving industry resources in teaching	50 hours in AY	50 hours in AY	50 hours in AY	50 hours in AY	50 hours in AY

Table 10.1.2.4: Strategic Development Plan for Students Related

Academic Years		2021-22	2022-23	2023-24	2024-25	2025-26
Sl. No.	Key Performance Area(KPA)	Progressive Enhancement Targets (PET) -Year-Wise				
1.	Admission (UG)	80%	85%	90%	95%	100%
2.	Admission (PG)	80%	85%	90%	95%	100%
3.	Placement (UG)	65%	70%	75%	80%	85%
4.	Placement (PG)	65%	70%	75%	80%	85%
5.	Student Entrepreneurs	2	3	4	6	8
6.	Student publications (UG)	5/dept	8/dept	12/dept	16/dept	25/dept

Table 10.1.2.5: Strategic Development Plan for Faculty Related

Academic Years		2021-22	2022-23	2023-24	2024-25	2025-26
Sl. No.	Key Performance Area (KPA)	Progressive Enhancement Targets (PET)-Year-Wise				
1.	Pass Percentage (UG)	75	≥ 80	≥ 80	≥ 85	≥ 90
2.	Pass Percentage (PG)	80	≥ 85	≥ 85	≥ 90	≥ 90
3.	Student: Faculty Ratio	1:18	1:18	1:15	1:15	1:15
4.	Publication per Faculty	70%	80%	90%	100%	100%
5.	Number of Ph.D.	30%	40%	50%	60%	70%

Table 10.1.5: Strategic Development Plan for Research and Development Strategy

Academic Years		2021-22	2022-23	2023-24	2024-25	2025-26
Sl. No.	Key Performance Area (KPA)	Progressive Enhancement Targets (PET) -Year-Wise				
1.	Funded Project -Applied	5	7	10	12	15
2.	Funded Project -Sanctioned	2	3	4	5	6
3.	Patent Published	1/Dept	1/Dept	2/Dept	2/Dept	3/Dept
4.	FDP/ Workshop conducted	1/Dept	1/Dept	1/Dept	2/Dept	2/Dept
5.	International Conference	1/Stream	1/Stream	1/Stream	1/Stream	1/Stream

6.	MOU with industry	1/Dept	2/Dept	2/Dept	3/Dept	3/Dept
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Conclusion:

PESCE was started with humble beginnings in 1962 and completed its Diamond Jubilee in 2022 (1962-2022). The institute has progressively grown and achieved many milestones. The Institution is making attempts to address challenges in terms of admissions, intake quality, faculty shortage, faculty quality, competition, and foreign institutions entry. The institute is aided by Govt. of Karnataka and got autonomous status and revises the syllabus quite frequently as per industry requirements. In the recent past, many engineering institutions are not able to attract students leading to unavailability and getting closed down in neighboring states. These challenges are being addressed as part of the Strategic Development Plan (SDP: 2021-2026).

The SDP is an outcome of detailed deliberations with all the stakeholders. This collective wisdom ensures owning up to the plan, especially Leadership and Management team. The high-level goals have strategies. The strategies have sub-strategies with detailed implementation plans to ensure success and sustainability. The execution and operational implementation are monitored periodically and necessary actions are initiated.