

Institutional Development Plan (2025–2030)

Malnad College of Engineering, Hassan

Vision

To be an institute of excellence in engineering education and research, producing socially responsible professionals.

Mission

- Create conducive environment for learning and research.
- Establish industry and academia collaborations.
- Ensure professional and ethical values in all institutional endeavours.

Strengths

- **Autonomous since 2007** with mature academic governance (BoS/Academic Council), enabling agile curriculum updates and interdisciplinary electives.
- **NAAC “A” (CGPA 3.20/4.00) valid upto 2029**, multiple NBA-accredited programs (dept-wise) — strong quality culture and accreditation literacy.
- **Experienced, stable faculty base** with a sizable proportion of Ph.D. holders; low attrition and active alumni mentoring.
- **Legacy & reputation (est. 1960)** with a broad regional footprint and Government-aided departments providing academic credibility.
- **Innovation & Entrepreneurship facility** with MERIISE, NAIN, AICTE IDEA LAB, BOSCH REXROTH, DST FIST LAB, etc
- **Active innovation & incubation ecosystem** (ME-RIISE, pre-incubation) that the 2025–30 plan scales into a full Incubation Centre.
- **Strategic proximity to ISRO-MCF (Hassan)** and a history of alumni linkages with ISRO/HAL/NAL/ADA.
- **Transparent processes** (timely results, governance practices), plus readiness to adopt ERP for e-governance.

Weaknesses

- **Mixed governance (aided + unaided)** complicates and slows **faculty recruitment**; aided-stream hiring tied to state government norms and rules.
- **Infrastructure variability**: several older blocks require modernization (cosmetic and functional); hostel/sports upgrades still in demand.
- **Bandwidth/digital backbone historically modest** for a campus of MCE’s size (pressure on labs/LMS during peaks).

- **Industry ecosystem around Hassan is thin**, so internships and live projects need extra orchestration and MoU activation.
- **Under-utilized marquee collaborations** (e.g., MoU, MCF-ISRO engagement not yet fully institutionalized).

Opportunities

- **NEP 2020 reforms**: academic flexibility, multidisciplinary offerings, credit for internships/community service — fits MCE's autonomy.
- **Centre of Excellence for Smart Agri-Tech, Sustainable Infrastructure, Precision Farming, Renewable Energy** to concentrate research, attract grants, seed IP, and brand MCE nationally.
- **Green Campus certification** and SDG-aligned operations (solarization, audits, waste/water systems) to uplift NAAC/NBA narratives and CSR appeal.
- **Alumni & CSR funding** (Bengaluru/Mysuru industry, PSU ecosystem) for labs, scholarships, startup seed funds, and facility upgrades.
- **Government & agency schemes** (AICTE, DST, VGST, MCI, MSME, Karnataka startups) to support incubation, IPR, and faculty development.
- **Consultancy & testing services** via specialized labs (civil) to generate revenue and deepen industry ties.
- **International partnerships** (credit transfer, short exchanges, language learning—German/French/Japanese) to raise global visibility.

Challenges (External/Risk Factors)

- **Intense competition** from newer private institutions with premium infrastructure and aggressive outreach.
- **Regulatory and financial constraints** (AICTE pay scales vs fee structure) stressing budgets for rapid modernization.
- **Changing enrolment mix**: core branches see variable demand across Karnataka; requires sustained outreach and program refresh.
- **Faculty talent market**: attracting/retaining high-end researchers in a non-metro location remains difficult without flexible policies.
- **Rapid tech shifts (AI/automation)** require continuous curriculum refresh and faculty up skilling to stay industry-relevant.
- **Macroeconomic cycles** can affect placements, CSR inflows, and family affordability for students from rural belts.
- **Compliance load** (NBA/NAAC/NIRF/AICTE/VTU) is rising; without ERP-backed data discipline, documentation could strain departments.

MCE Strategic Goal I: Academic Excellence & Global Readiness

Develop, strengthen, and implement affordable, high-quality technical programs aligned with MCE's mission. Systematically review curriculum for sustained quality and relevance to transform rural/regional talent into a globally competitive workforce.

Sub-Goal 1: Tier-III Student Readiness & NEP-2020 Transformation (SDG 4 & Target 4.3)

Accelerate regional equity by aligning MCE's government-aided structure with modern educational frameworks.

- **Strategy I:** Deploy a flexible, interdisciplinary NEP curriculum leveraging the VTU/Autonomous framework to maximize academic choice for diverse student backgrounds.
- **Strategy II:** Deepen outcome-based education (OBE) by integrating affordable, hyper-local project-based learning models relevant to regional challenges.
- **Strategy III:** Scale up native mentoring networks by institutionalizing structured parent-student-faculty interactions to guide first-generation engineering students.

Sub-Goal 2: Capacity Expansion for Emerging Technologies (SDG 9 & Target 9.5)

Overcome geographic limitations by leveraging low-cost digital infrastructure and government-backed emerging tech streams.

- **Strategy I:** Assess local feasibility to introduce specialized tracks in Edge AI, Renewable Energy & Energy Storage Systems, Industry 4.0, Robotics & Intelligent Manufacturing, VLSI and Sustainable Engineering using existing government grants.
- **Strategy II:** Offer multidisciplinary open electives that merge traditional engineering branches with smart-city and Agri-AI and Smart Farming.
- **Strategy III:** Co-design low-cost, high-impact certification modules with VTU ecosystems, local industries, and alumni networks.
- **Strategy IV:** Aggressively incentivize NPTEL, SWAYAM, and digital MOOCs to provide elite-tier technical competencies at zero or minimal cost to students.

Sub-Goal 3: Research-Informed Pedagogy & Grassroots Innovation (SDG 4)

Cultivate a robust research and inquiry mindset by optimizing institutional talent and grant funding.

- **Strategy I:** Embed faculty research findings and regional case studies directly into classroom teaching to solve localized technical problems.
- **Strategy II:** Launch frugal innovation hubs and undergraduate research cells to inspire grassroots problem-solving and student-led IP creation.
- **Strategy III:** Utilize government-sponsored FDPs (Faculty Development Programs) to train educators in modern ICT tools and industry-aligned pedagogies.

MCE Strategic Goal II: Sustainable Infrastructure & Technological Transformation

Enhance and modernize MCE's established campus infrastructure to support academic expansion, advanced research, and green initiatives. Maximize government grants and institutional resources to build a sustainable, digitally smart, and regionally competitive learning environment.

Sub-Goal 1: Modernization of Academic & Digital Infrastructure (SDG 9 & Target 9.c)

Upgrade existing heritage facilities into smart, high-connectivity learning spaces while optimizing capital expenditure.

- **Strategy I:** Convert traditional classrooms using state-of-the-art ICT tools to make smart learning spaces and deploy virtual digital laboratories to bridge the urban-rural resource gap.
- **Strategy II:** Phased upgrading of existing laboratories and central facility complexes with energy-efficient, academic amenities.
- **Strategy III:** Expand campus-wide high-speed Wi-Fi fiber networks and integrate an end-to-end ERP system to streamline administrative and academic workflows.

Sub-Goal 2: Strengthen Research, Skill Development & Regional Innovation (SDG 9 & Target 9.b)

Leverage existing ecosystems like MERIISE and DST-FIST to drive interdisciplinary research tailored to regional needs.

- **Strategy I:** Scale up existing Centres of Excellence and leverage schemes like DST-FIST, MERIISE, and AICTE IDEA Lab to advance research in Edge AI, Renewable Energy & Energy Storage Systems, Industry 4.0, Robotics & Intelligent Manufacturing, VLSI and Sustainable Engineering.
- **Strategy II:** Establish interdisciplinary research clusters specifically targeting Malnad region challenges, such as agricultural automation, post-harvest technology, and rural waste management.
- **Strategy III:** Incentivize inter-departmental collaborative projects to maximize the utility of specialized lab equipment across branches.
- **Strategy IV:** Expand institutional consultancy services for local government bodies, and regional industries through accredited testing laboratories.

Sub-Goal 3: Eco-Campus Sustainability & Resource Conservation (SDG 11 & Target 11.6)

Transform MCE into a model green campus through resource recycling, community participation, and eco-auditing.

- **Strategy I:** Pursue formal Green Campus certification by embedding environmental sustainability standards into daily institutional operations.

- **Strategy II:** Implement strict periodic energy, green, and environment audits, alongside decentralized water recycling and solid waste management systems.
- **Strategy III:** Enhance campus green cover, and renewable energy utilization through active student innovation & projects, Alumni.

MCE Strategic Goal III: Inclusive Learning Ecosystem & Holistic Student Success

Promote and sustain an equitable, vibrant learning ecosystem that ensures inclusivity, academic success, and holistic development. Leverage government welfare schemes, alumni networks, and community-driven initiatives to empower a diverse student population.

Sub-Goal 1: Modernize Teaching-Learning & Industry Readiness

Bridge the urban-rural skill gap using open-source digital tools and socially relevant experiential learning.

- **Strategy I:** Implement blended learning models utilizing open-source Learning Management Systems (LMS) and high-quality digital content to enable self-paced learning.
- **Strategy II:** Restructure course assessments to include society-centric and industry-linked projects that address regional challenges.
- **Strategy III:** Institutionalize low-cost faculty recognition programs and teaching awards to incentivize pedagogical innovation and ICT adoption.
- **Strategy IV:** Secure local industry partnerships, field visits, and hands-on workshops through IUCEE, IEEE and Alumni involvement to provide affordable experiential learning opportunities.

Sub-Goal 2: Socio-Economic Empowerment & Multi-Tier Mentorship

Maximize financial aid accessibility and deploy peer-to-peer support systems for first-generation engineering students.

- **Strategy I:** Conduct targeted bridge courses in English communication, technical foundations, and soft skills to ease the transition of rural students.
- **Strategy II:** Streamline the dissemination and processing of state/central government scholarships, while expanding already available alumni-funded schemes for needy students.
- **Strategy III:** Activate student clubs to run structured peer-to-peer mentoring circles for academic support and mental well-being.
- **Strategy IV:** Formalize a virtual and hybrid Alumni-Industry mentoring network to provide career guidance without geographic constraints.

Sub-Goal 3: Campus Inclusivity, Wellness & Social Responsibility

Foster a safe, supportive, and culturally rich campus environment that builds civic responsibility.

- **Strategy I:** Strengthen institutional cells (Gender Equity, Internal Complaints Committee) and run safety campaigns tailored to a co-educational, regional campus.
- **Strategy II:** Upgrade existing hostel amenities, sports grounds, and yoga programs through subsidized government grants and student-led committees.
- **Strategy III:** Leverage NSS, and cultural clubs to organize community-service camps and local fests that foster social harmony and rural development.

MCE Strategic Goal IV: Strategic Partnerships, Industry Interface & Global Alignment

Strengthen academic interactions and measurable collaborations with national and international institutions, industries, and professional bodies. Enhance innovation, collaborative research, and global competitiveness while meeting the outcome-based metrics of NBA and the credit-transfer mandates of NEP 2020.

Sub-Goal 1: Outcome-Driven Collaborations & Institutional MoUs (NEP 2020)

Transform institutional agreements into active, credit-bearing pathways for student and faculty development.

- **Strategy I:** Establish functional MoUs with premier domestic institutions (IITs/IISc/NITs) and international partners, prioritizing actionable outcomes like joint publications and co-guided student projects.
- **Strategy II:** Operationalise NEP 2020-compliant credit transfers, virtual student/faculty exchange programs, joint webinars, and collaborative certification modules.
- **Strategy III:** Enhance existing institutional funding and travel grants to incentivize faculty and student participation in peer-reviewed Scopus/WoS indexed international conferences and global technical forums.
- **Strategy IV:** Map all collaborative academic activities directly to **Program Specific Outcomes (PSOs)** and **Program Outcomes (POs)** to systematically satisfy NBA criteria.

Sub-Goal 2: Industry-Immersive Pedagogy & Societal Consultancy

Embed professional industry practices into the curriculum and monetize technical expertise to solve regional challenges.

- **Strategy I:** Embed mandatory, multi-disciplinary hackathons, and industry-designed electives directly into the autonomous curriculum structure.
- **Strategy II:** Formalise professional society chapters (like IEEE, SAE, ASME, ISTE) to host student-led technical events that enhance leadership, teamwork, and modern tool usage.
- **Strategy III:** Institutionalise an Engineering Consultancy and Testing Centre to solve regional civic, agricultural, and industrial challenges while generating internal revenue.

- **Strategy IV:** Utilise consultancy data and real-world industrial case studies to enrich classroom teaching and upgrade laboratory experiments to meet modern industry standards.

MCE Strategic Goal V: Synergistic Collaborations with National Centres & Emerging Tech Domains

Strengthen resource-efficient, collaborative engagements with institutes of national importance and emerging technology sectors. Optimize external funding, virtual platforms, and expert networks to enrich joint teaching, grassroots prototyping, and applied research within aided institutional frameworks.

Sub-Goal 1: Low-Cost Expertise Integration & Faculty Deputation (SDG 4 & SDG 9)

Embed premier national expertise into the MCE ecosystem by utilizing hybrid models and government-sponsored training schemes.

- **Strategy I:** Induct senior scientists and experts from ISRO, HAL, NAL, IISc, and IITs—prioritising distinguished MCE alumni—into Board of Studies (BoS) and Academic Council roles via hybrid/online modes.
- **Strategy II:** Maximize faculty deputation through fully funded government channels such as the AICTE Quality Improvement Programme (QIP), SERB fellowships, and DST summer schools to minimize institutional financial liability.
- **Strategy III:** Institutionalize short-term, virtually delivered masterclasses and co-taught modules by national-level experts to bypass geographical isolation.

Sub-Goal 2: Cost-Effective Emerging Tech Cells & Prototyping (SDG 9 & Target 9.5)

Execute ambitious tech initiatives through external grants, consortium-based development, and shared regional resources.

- **Strategy I:** Drive multi-departmental student teams to co-develop subsystems for emerging technologies utilizing existing institutional infrastructure.
- **Strategy III:** Focus on low-cost, high-utility prototyping and applied research that solves immediate regional or national problems, paving the way for technology transfers to local MSMEs.
- **Strategy III:** Leverage centralized facilities at nearby premium hubs (like IISc/CMTI Bengaluru/NITK) and I-STEM for advanced testing and validation to eliminate the need for expensive in-house equipment.



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