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Announcement

EDITED VOLUME
on
Shaping Self-Reliant Bharat through Knowledge and Innovation

An Edited Volume titled ***'Shaping Self-Reliant Bharat through Knowledge and Innovation'*** is being published**.** The publication will feature the contributions from eminent educationists on the aforementioned theme. Readers of the University News are also invited to contribute to the Volume by submitting papers/articles on the above theme by **July 31, 2026**. All submissions will be subject to the approval of the Editorial Committee of the University News. The contributions are invited on the following Subthemes:

Integrating Traditional Wisdom in Curriculum and Research.

- Embedding Indian Knowledge Systems (IKS) into Curricula & Faculty Development.
- Interdisciplinary Research Linking Ancient Wisdom with Modern Science & Technology.
- Futuristic Dimensions of IKS.

Promoting Sustainability and Social Responsibility in Higher Education Institutions.

- Research and Innovation in HEIs for Sustainable Development Goals.
- University Social Responsibility (USR) for Promoting Swadeshi.
- Futuristic Digital and Technological Pathways to Sustainability.

Fostering Entrepreneurship and Startups in Higher Education Institutions.

- Education for Increasing Entrepreneurship Mindset in Students.
- Establishing Incubation and Innovation Centres to promote Techno-Nationalism.
- University–Industry Collaboration for Startup Development.

Creating AI and Quantum-enabled Higher Education Institutions.

- Integrating AI and Quantum Technologies into Higher Education Curriculum, Pedagogy and Governance.
- AI-Driven Indigenous Research and Product Development.
- Global Regulatory Framework for AI and Ethics in AI.

Advancing Self-Reliant Bharat through Swadeshi, Economic Patriotism, and Techno-nationalism.

- Redesigning Educational Ecosystem to Promote Swadeshi.
- Promoting Research and Development in Indigenous Technologies.
- Economic Patriotism Leading to Economic Indigenisation.

Any Other Relevant Subthemes

Your expertise and vision in the field of higher education, along with your ideas and strategies, will greatly enrich the upcoming publication. If the invited articles are not included in the upcoming book, they may be considered for publication in the University News's Weekly Issues, in accordance with its guidelines. Manuscripts of papers/articles should be approximately 3,000-4,000 words in MS Word format, following APA style for citations and adhering to general publication norms. Please submit your manuscripts by **July 31, 2026** to the Editor, University News, through E-mail: *ramapani.universitynews@gmail.com, unaiu89@gmail.com* and *universitynews@aiu.ac.in.*

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Transformation of Doctoral Education in the AI Age: Integrating Indigenous Knowledge, Partnership Models, and Problem-based Research

Neeraj Saxena* and S P Raju**

Introduction: AI as Diagnostic Tool

Artificial Intelligence has become a diagnostic tool for doctoral education, revealing fractures we have long ignored. But AI doesn't just expose our system's inadequacy for the future– it reveals that our system never accomplished what we claimed it did. The uncomfortable truth: traditional doctoral programmes primarily evaluated patience, compliance, and navigation of bureaucratic hierarchies rather than the higher-order cognitive capabilities that create breakthrough research.

Consider the traditional doctoral journey– a researcher spends 4-6 years conducting original research under supervision, culminating in a 300-page dissertation defending their knowledge contribution. In 2025, AI can synthesise literature reviews in hours, identify research gaps in minutes, generate testable hypotheses, and draft methodological frameworks that would take human researchers months to formulate (Lund & Wang, 2023; and Zawacki-Richter et al., 2019). This temporal paradox is unavoidable: by the time a researcher defends work begun in 2021, foundational assumptions may have been superseded by developments in 2024 or 2025.

Contemporary research demonstrates accelerating knowledge obsolescence across disciplines. In computational sciences, benchmarks become outdated within months. In medical research, treatment protocols evolve continuously. In policy studies, geopolitical realities shift faster than dissertations can be completed. This isn't a future threat– it's the present reality that AI makes impossible to ignore.

The Seven Foundational Errors AI Exposes

AI's diagnostic power reveals seven fundamental flaws inherited from colonial academic structures that served gatekeeping rather than knowledge creation. These errors persist today, creating systemic dysfunction that AI now makes impossible to ignore:

Error 1: The Supervisor as Knowledge Gatekeeper

Colonial Logic: One supervisor 'directs' research, maintaining power through information control. AI Reality: When knowledge access is democratised, hierarchical gatekeeping becomes obsolete. Impact: This perpetuates academic feudalism, delays innovation,

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Table 1: The Knowledge Half-Life Crisis Across Disciplines

Discipline	Knowledge Half-Life	Training Duration	References
Computational Sciences	6-12 months	4-6 years	Russell & Norvig, 2020; Goodfellow et al., 2016
Medical Research	18-24 months	5-7 years	Ioannidis, 2005; Djulbegovic & Guyatt, 2017
Machine Learning	3-6 months	4-6 years	Sutton & Barto, 2018; LeCun et al., 2015
Policy Studies	12-18 months	4-6 years	Sabatier & Weible, 2014
Materials Science	24-36 months	4-6 years	Ashby & Jones, 2012
Environmental Science	18-24 months	4-6 years	IPCC, 2021; Steffen et al., 2015
Engineering Applications	12-24 months	4-6 years	Budynas & Nisbett, 2020

Note: *Knowledge half-life indicates the timeframe within which 50% of existing knowledge becomes obsolete or significantly revised. The ranges shown are discipline-specific estimates derived from citation analysis, expert consensus, and the literature cited; they represent approximate indicative timeframes rather than precise empirical measurements. Traditional doctoral training durations far exceed most disciplines' knowledge currency windows.*

limits interdisciplinary collaboration, and creates power imbalances that have nothing to do with research quality.

Error 2: The Solo Researcher Fiction

Colonial Logic: Doctoral candidates work in isolation, proving individual capability. AI Reality: Breakthrough research requires diverse perspectives and collaborative intelligence. Impact: This produces narrow specialists unable to tackle complex, real-world challenges that increasingly require transdisciplinary approaches.

Error 3: The Dissertation as Monument

Colonial Logic: 300-page documents demonstrating comprehensive treatment of narrow topics. AI Reality: Knowledge contributions are measured by impact and applicability– not page count. Impact: Creates unmarketable expertise, wastes cognitive effort on format over substance, and delays deployment of research findings.

Error 4: The Defence Theatre

Colonial Logic: Viva voce where candidates 'defend' against examining committees. AI Reality: Research quality is validated through peer review, replication, and deployment. Impact: Rewards performance over productivity, rhetoric over results, creating perverse incentives that have nothing to do with research quality.

Error 5: The Time-Bound Sentence

Colonial Logic: Fixed 4-6year duration regardless of complexity or progress. AI Reality: Problems have variable complexity; some require longer engagement, others a rapid solution. Impact: Creates artificial timelines that ignore problem complexity and solution readiness, incentivising risk aversion.

Error 6: The Originality Fetish

Colonial Logic: Emphasis on 'novel contribution'– often trivially new variations. AI Reality: Real value lies in synthesis, translation, application– making knowledge actionable. Impact: Incentivises incremental minutiae over transformational integration.

Error 7: Detachment from Deployment

Colonial Logic: Research concludes with publication; implementation is irrelevant. AI Reality: Research divorced from application has no validity in an evidence-based world. Impact: Produces academic knowledge with no pathway to societal impact, creating a disconnect between research and practice.

The Great Reversal: From Up-Research to Down-Research

Traditional research models assume researchers must know everything before attempting anything– an assumption AI obliterates. This sequential model requires mastering exhaustive literature across entire domains before identifying defensible gaps, designing rigorous conservative methodologies, executing prolonged data collection, and finally analysing findings for committee defence. The DOWN research framework, developed in earlier conceptual work by the corresponding author (Saxena, 2025a, 2025b) proposes reversing this sequence entirely.

The AI-age DOWN research model reverses this completely. Researchers start by identifying

urgent, authentic challenges. Simultaneously, AI provides real-time literature synthesis, identifies methodological precedents, suggests cross-domain analogies, and enables rapid prototyping. This allows human cognition to focus exclusively on creative problem formulation, ethical reasoning and stakeholder balance, interdisciplinary synthesis and integration, knowledge translation from technical to accessible forms, and deployment design with impact verification.

The reversal is complete: instead of climbing up a pyramid of prerequisite knowledge, researchers dive down into authentic challenges, using AI to access needed knowledge instantly while focusing cognitive energy exclusively on higher-order functions– Bloom's Levels 4-6 (Analyse, Evaluate, Create). This isn't an enhancement– it's a fundamental transformation of what human researchers contribute.

AI as a Cognitive Expansion System

Strategic insight reveals that AI doesn't replace human research capacity– it transcends human information-processing boundaries. Where humans face limitations in processing vast literature across disciplines, AI systems simultaneously monitor dozens of fields, identify emerging patterns in real-time, and suggest novel connections invisible to individual cognition. Cross-domain pattern recognition becomes accelerated: AI excels at analogical reasoning across disparate fields– immediately identifying structural similarities between immune system responses and cybersecurity protocols, or flocking behaviour and market dynamics. Dynamic literature synthesis enables continuously updated knowledge maps incorporating real-time findings, identifying emerging research gaps based on global trends rather than local supervisor expertise. Methodological translation allows AI systems to rapidly assess approaches across disciplines and identify cross-domain applications– techniques successful in biology informing engineering challenges, game theory insights applied to ecological problems, ethnographic methods adapted to AI system evaluation.

Heutagogy: The Pedagogical Foundation for AI-Enabled Research

Heutagogy, originally conceptualised as 'self-determined learning,' provides the pedagogical framework for transforming doctoral education. Unlike pedagogy (teacher-directed) and andragogy (self-directed learning for adults), heutagogy emphasises learner autonomy in determining both what to learn and how to learn it. This framework is uniquely suited to doctoral education in the AI age.

Heutagogical principles assert that learners should define learning objectives based on authentic challenges rather than predetermined curricula, choose learning methodologies and resources aligned with their research contexts, reflect continuously on learning processes and adjust strategies accordingly, develop meta-learning capabilities–learning how to learn in novel domains- and take responsibility for evaluating their own competency and contribution quality.

In the context of doctoral research, heutagogy manifests as researchers identifying research challenges anchored in real-world needs rather than supervisor assignments, assembling customized learning ecosystems comprising AI tools, domain experts, and peer networks suited to their specific problems, developing adaptive research methodologies informed by continuous feedback and emerging evidence, engaging in recursive reflection

Table 2: Traditional UP Research vs. AI-Enabled DOWN Research

Dimension	Traditional UP Model	AI-Enabled DOWN Model
Starting Point	Literature review mastery	Authentic problem identification
Knowledge Access	Supervisor-mediated	AI-enabled, self-directed
Timeline	Fixed 4-6 years	Variable 18-60 months
Primary Focus	Comprehensive coverage	Higher-order cognition (Bloom 4-6)
Cognitive Load	Information gathering	Creative problem-solving
Iteration Speed	Slow (months)	Fast (days/weeks)
Learning Framework	Pedagogical (teacher-directed)	Heutagogical (self-directed)
Cross-disciplinary	Discouraged/isolated	Enabled/accelerated
Validation	Defence performance	Deployment evidence
AI Integration	Prohibited/suspicious	Mandatory/transparent

on research epistemology, ethical frameworks, and contribution implications, and validating their competency through demonstrated impact rather than credentialing exams. The heutagogical doctorate emphasises capability-building over credential-earning, transforming researchers from knowledge consumers to knowledge creators capable of navigating unknown problem spaces–precisely the capability the AI age demands.

Breaking Academic Gatekeeping: The Supervisor-Optional Future

Historical precedent demonstrates that transformative research often originates from passionate investigators rather than credentialed specialists. Darwin's evolutionary theory emerged without formal graduate training. Mendel's genetic insights came from a monastery garden. Franklin's electrical discoveries predated institutional research structures. The contemporary reality is that AI tools now provide sophisticated research capabilities–literature synthesis, data analysis, hypothesis generation, methodological guidance– that previously required years of specialised graduate training and supervisor mediation.

The inevitable conclusion: a passionate investigator with domain expertise but no formal academic credentials can now access analytical capabilities rivalling those of traditionally trained researchers. The supervisor's historical role as knowledge gatekeeper has become technologically obsolete. Traditional doctoral admission prioritises academic pedigree: undergraduate grades, GRE scores, letters of recommendation from recognised authorities. This gatekeeping preserved institutional control but filtered for compliance rather than capability.

The evidence-based alternative should prioritise demonstrated research capability and intellectual promise regardless of credential pathway: independent research publications in peer-reviewed venues, open-source contributions to research infrastructure, documented problem-solving in complex domains, evidence portfolios demonstrating Level 4-6 Bloom's capabilities, validated contributions to indigenous knowledge preservation, and community-recognised expertise in traditional knowledge systems. Precedent for distributed and partnership-based supervision already exists in professional and industrial doctorate models, where supervisory responsibility is shared across academic and practice contexts (Lee & Murray, 2015; Maxwell & Kupczyk-Romanczuk, 2009). The equity dimension is critical: indigenous

Table 3: Terminology Transformation : Traditional to AI-age Framework

Traditional Term	Proposed Term (for AI-age)	Rationale
Supervisor	Principal Research Partner (PRP)	Emphasises collaboration over hierarchical control
Co-Supervisor	Domain Research Partner	Equal status partners with different expertise areas
Student/Scholar	Research Fellow	Professional researcher identity from admission
Supervisory Committee	Research Partnership Consortium (RPC)	Collaborative support structure
Thesis Defence/Viva	Research Contribution Symposium	Intellectual exchange over interrogation
Progress Reports	Competency Demonstrations	Evidence-based over approval-based

Table 4: Evolution of Doctoral Supervision Models

Aspect	Colonial Model	Traditional Model	Partnership Ecosystem
Authority Structure	Single supervisor autocracy	Supervisor + committee hierarchy	Distributed authority
Knowledge Access	Gatekeeper control	Mediated access	AI-enabled democracy
Researcher Role	Subordinate learner	Graduate student	Co-investigator
Decision-Making	Supervisor directive	Committee approval	Evidence-based consensus
Expertise Source	Single supervisor domain	Disciplinary specialists	Transdisciplinary networks
Accountability	To supervisor	To committee	To stakeholders + field
Indigenous Knowledge	Extractive research	Distant engagement	Co-inquiry partnership

knowledge holders, community practitioners, and field experts possess research-relevant wisdom that formal education never captures. AI democratisation, combined with supervisor-optional pathways, could unleash research potential currently trapped outside academic institutions.

From Time-Packs to Problem-Packs

Current doctoral programs measure 'progress' through temporal milestones–coursework completion, comprehensive exams, proposal defence, dissertation chapters– regardless of intellectual development quality. This treats doctoral education as an endurance exercise rather than an achievement process. Traditional doctoral programs consume $200,000–400,000 over 6-8 years, including stipends, tuition, and opportunity costs in high-income countries such as the US and UK (OECD, 2023; Council of Graduate Schools, 2022), producing graduates with partially obsolete training. Students spend years demonstrating they can do what AI now accomplishes in hours.

The innovation killer aspect of time-bound structures incentivises risk aversion. Why pursue breakthrough research requiring uncertain timelines when incremental work guarantees timely graduation? The result: disciplinary silos, safe questions, and research that's defensible rather than transformational. The problem-pack revolution assesses progress through demonstrated intellectual contribution– validated insights, methodological innovations, reproducible results, translatable applications– not temporal endurance.

Four adaptive duration tracks enable variable completion: *Rapid Solution Track* (18-24 months) for well-bounded problems with clear methodological approaches where solution deployment and validation serve as completion criteria; *Standard Innovation Track* (24-36 months) for moderate complexity requiring methodological adaptation and integration across 2-3 disciplines with novel synthesis or significant optimization; *Exploratory Development Track* (36-48 months) for high uncertainty involving theoretical development, cross-domain integration requiring new frameworks, and significant methodological innovation; and *Frontier Breakthrough Track* (48-60 months) for high-risk, high-reward research at disciplinary boundaries with paradigmatic challenges requiring new conceptual foundations and potential for field-transforming contributions.

Duration is determined by problem complexity and evidence of contribution, not arbitrary time requirements. Some researchers complete in 18 months; others require 60. Both are equally valid if the contribution evidence meets standards. This represents a fundamental shift from credential-earning to capability-demonstration.

The SPRINT Framework for Problem-Pack Research

S: ***Self-defined & Stakeholder-anchored***: Researchers identify authentic challenges, not supervisor-assigned questions. Stakeholder validation ensures real-world relevance while indigenous communities co-define research priorities.

P: ***Problem-based & Prior-art-Aware***: Start with urgent challenges, not literature gaps. AI provides comprehensive prior-art mapping, allowing focus on what needs solving rather than what's defensible.

R: ***Reflective & Replicable***: Continuous documentation of reasoning processes with transparent AI integration and human verification enables an open methodology for independent validation.

I: ***Innovative & Iterative***: Embrace rapid prototyping and learning from failure. AI enables quick testing of multiple approaches, valuing progression over perfection.

N: ***Navigated & Networked***: Global collaboration transcends institutional boundaries with expert consultation networks replacing single supervisors and interdisciplinary design review boards providing guidance.

T- ***Transformative & Translatable***: Aim for impact beyond academic publications. Evidence portfolios document deployment outcomes with success measured by problems solved, not papers published.

Indigenous Knowledge Integration: AI as Preservation and Validation

India's competitive advantage in the AI age lies not in adopting Western research models faster, but in using AI to preserve, validate, and scale indigenous knowledge systems that the West has never accessed. Traditional medicines, agricultural practices,

ecological wisdom, and craft techniques reside in oral traditions, at risk of disappearing as practitioners age. Each passing elder takes irreplaceable knowledge with them. The urgent challenge demands immediate action.

AI enables natural language processing to document indigenous languages, pattern recognition to identify active compounds in traditional formulations, machine learning to optimise traditional agricultural techniques, computer vision to preserve craft techniques through video analysis, and network analysis to map traditional ecological knowledge systems. These capabilities enable documentation and validation at an unprecedented scale.

The Indigenous Research Partnership Model recognizes indigenous knowledge holders as co-investigators with expertise equal to academic knowledge, not research subjects to be studied. This represents a fundamental shift in research epistemology. Critical protocols ensure free, prior, and informed consent from indigenous communities; communities maintain authority over knowledge use and dissemination; indigenous experts are recognised as co-investigators in all outputs; benefit-sharing mechanisms ensure economic returns; and cultural protocols protect sacred or restricted knowledge.

Example: Traditional water management systems in Rajasthan demonstrate this partnership model. Academic partners provide methodology consultation in hydrology and environmental engineering. Indigenous experts serve as primary knowledge holders, bringing centuries of practical wisdom. Domain partners from sustainable development NGOs and Jal Jeevan Mission provide deployment pathways. AI systems enable satellite imagery analysis, water table modelling, and historical climate data synthesis. The doctoral researcher provides synthesis and documentation, creating implementation blueprints accessible to contemporary practitioners.

Evidence-Based Contribution Portfolios

The 300-page dissertation served an era when printing was expensive, and peer review was slow. In the AI age, it's an obsolete format– like submitting research findings via telegraph. The problems are clear: it takes 6-12 months to write, delaying deployment; format optimised for examination committees, not practitioners; static snapshot of knowledge in rapidly evolving fields; incentivises comprehensiveness over impact; and rarely read beyond examiners.

The evidence-based contribution portfolio comprises seven components that document actual research contributions:

Component 1 : Challenge Architecture (10-15 pages) articulates what authentic problem this research addresses, why it matters and to whom, what stakeholders define success criteria, what measurable impact would look like, and how this connects to urgent societal needs.

Component 2 : Process Documentation (ongoing, multimedia) captures the research journey in real-time through digital lab notebooks showing hypotheses tested, refined, or abandoned with reasoning, failures and pivots transparently documented, partnership dynamics and collaboration challenges, ethical dilemmas

Table 5: AI Tools for Indigenous Knowledge Preservation and Validation

Knowledge Domain	AI Application	Preservation Benefit	Validation Pathway
Traditional Medicine	NLP + compound identification	Digital archive of oral traditions	Bioactive ingredient verification
Agricultural Practices	Computer vision + climate modelling	Video documentation of techniques	Yield optimisation + sustainability
Water Management	Satellite imagery + hydrological modelling	Historical system mapping	Water table sustainability analysis
Craft Techniques	3D scanning + materials analysis	Procedural documentation	Market readiness + quality standards
Ecological Knowledge	Network analysis + biodiversity databases	Traditional classification systems	Ecosystem health indicators
Herbal Pharmacology	ML pattern recognition	Treatment outcome databases	Efficacy comparison with modern medicine
Food Security	Agricultural data mining	Crop variety documentation	Nutritional profiling + climate adaptation

navigated with stakeholder input, and AI integration showing what tools were used and how outputs were verified.

Component 3 : Methodology Innovation (format varies) documents novel approaches developed or adapted, cross-domain methodological translations, AI-human collaboration protocols, reproducibility documentation enabling independent validation, and open-source tools or frameworks created.

Component 4: Solution Architecture (implementation-ready) provides detailed blueprints of interventions/innovations, deployment protocols with step-by-step guidance, scalability analysis and adaptation guidelines, risk mitigation strategies identified, and resource requirements specified.

Component 5 : Deployment Evidence (verifiable metrics) includes real-world implementation data with timestamps, stakeholder testimonials and impact assessments, outcome measurements against initial challenge criteria, comparison with existing approaches where applicable, and failure analysis when deployment encounters obstacles.

Component 6 : Knowledge Contributions (peer-validated) comprises journal publications if domain-appropriate, conference presentations with documented impact, policy briefs adopted by government agencies, open-source code/datasets used by other researchers, educational materials for community dissemination, and patents or innovations with commercial applications.

Component 7 : Blockchain Verification (tamper-proof validation) provides timestamps for all contributions and milestones, peer validation at each research phase, domain partner sign-offs on practical relevance, community stakeholder endorsements, AI system audit trails showing tool usage, and independent reproducibility confirmations. The potential of blockchain for credential verification and competency portfolios in education has been demonstrated in emerging pilot initiatives (Grech & Camilleri, 2017). Contribution verification occurs at multiple levels:

Level 1 (Prototype Validation) demonstrates technical feasibility and sound research capability;

Level 2 (Pilot Deployment) shows real-world functionality and practical relevance;

Level 3 (Scaled Implementation) verifies robust generalizability; and

Level 4 (Systemic Integration) demonstrates a field-transforming contribution where the solution becomes standard practice. Doctoral completion can occur at any level– the difference is contribution scope, not researcher quality.

Assessment Beyond Defence Theatre

Traditional oral examinations served one historical purpose: ensuring candidates actually did the work in an era before plagiarism detection and digital documentation. In an age of blockchain verification, real-time process documentation, and stakeholder validation, this ritual is obsolete. The problems with traditional defence are clear: tests performance skills, not research quality; rewards rhetoric over results; creates perverse incentives like hiding challenges and manufacturing certainty; enables abusive power dynamics; and provides no useful information beyond portfolio evidence.

The Competency Demonstration Framework replaces traditional defence with four mechanisms:

Demonstration 1 : Public Presentation, comprising a 45-minute presentation of challenge, process, and outcomes to the partnership ecosystem and wider community with Q&A, filmed and archived for transparency and accessibility, using accessible language avoiding unnecessary jargon, verifying knowledge translation capability.

Demonstration 2 : Stakeholder Validation through verified testimonials where domain partners confirm practical relevance and deployment feasibility, community stakeholders validate impact and ethical integrity, academic partners verify methodological rigour and reproducibility, AI systems provide audit trails of the research process, and peer researchers confirm contribution significance.

Demonstration 3 : Reproducibility Verification ensures methodology documentation is sufficient for replication, with data and code available in open repositories where appropriate; independent researchers attempt reproduction; result consistency is verified by external evaluators, ensuring research integrity and transparency.

Demonstration 4 : Critical Reflection through a 25- 30-page written synthesis addressing

what was learned about the challenge domain, how thinking evolved throughout research, what would be done differently with current knowledge, implications for others addressing similar challenges, ethical dilemmas encountered and navigation approaches, how AI integration reshaped the research approach, and limitations and boundaries of contribution.

Minimum doctoral completion requires Level 4 (Analyse) or higher in at least 6 competencies, Level 3 (Apply) or higher in remaining competencies, and an evidence portfolio meeting verification standards. Distinction recognition requires Level 6 (Create) in 5+ competencies, Level 4 in all competencies, exceptional stakeholder validation, and evidence of field-transforming contribution. No grades, no percentages– only competency-level verification with transparent evidence.

Implementation Through Policy Transformation

These reforms require three levels of change: immediate regulatory reforms (2026-2027), systemic transformations (2027-2030), and constitutional provisions enabling autonomy and flexibility. Universities should implement parallel track strategies allowing both traditional and transformed systems simultaneously for comparative evaluation and gradual transition. This enables evidence generation, iterative refinement, and stakeholder confidence-building before mainstream adoption.

Immediate regulatory reforms include recognizing supervisor-optional pathways by amending UGC PhD regulations to permit formation of Design Review Boards as alternatives to supervisors, enabling partnership ecosystems with distributed guidance roles, recognizing AI systems as explicit research partners requiring human verification, and permitting independent research with global mentorship networks; eliminating fixed duration requirements by allowing variable duration (18-60 months) based on problem complexity, setting completion criteria as contribution evidence rather than time elapsed, permitting accelerated completion for well-bounded problems, and allowing extended timelines for frontier research with periodic evaluation.

Additional immediate reforms include recognizing evidence portfolios by allowing evidence-based contribution portfolios in formats appropriate to research, replacing viva voce with multi-format competency demonstrations, recognizing deployment evidence and stakeholder validation, and permitting blockchain-verified living documents

Table 6: Competency Assessment Framework for Transformed Doctoral Education

Competency Domain	Evidence Sources	Bloom Level Requirement	Verification Method
Problem Architecture	Challenge brief, stakeholder validation, need articulation	Analyse → Create	Design review board assessment
Methodological Integrity	Peer review, reproducibility verification, academic partner endorsement	Apply → Evaluate	Independent replication audit
Ethical Reasoning	Stakeholder consent, community validation, conflict resolution documentation	Understand → Evaluate	Ethics oversight committee
Interdisciplinary Synthesis	Cross-domain integration, novel framework development, paradigm bridging	Analyse → Create	Peer expert panel review
Knowledge Translation	Accessible outputs, practitioner adoption, policy influence	Apply → Create	User testing + adoption metrics
Impact Creation	Deployment data, outcome measurements, sustained change evidence	Apply → Create	Stakeholder testimonials + data
Collaborative Capacity	Partnership functioning, conflict resolution, network building	Apply → Evaluate	Network analysis + feedback
AI Integration Mastery	Tool usage documentation, verification protocols, human-AI collaboration	Analyse → Evaluate	AI transparency audit

evolving with research; and enabling adaptive track selection through four tracks (Rapid Solution 18-24m, Standard Innovation 24-36m, Exploratory Development 36-48m, Frontier Breakthrough 48-60m) with permission for track switching based on research evolution, tailored requirements to track complexity, and funding mechanisms aligned with track durations.

Systemic transformations include creating indigenous knowledge research frameworks with community partnership mandatory, traditional knowledge holders recognized as co-investigators, benefit-sharing protocols required for commercial applications, cultural protocols respected in methodology and dissemination, and intellectual property control maintained by communities; establishing partnership ecosystem standards ensuring transparent disclosure of all partnership roles and funding sources, conflict of interest protocols with independent oversight, community stakeholder inclusion for research affecting public interest, open publication rights for researchers, and ethical review independent of funders.

Further systemic transformations include mandating AI integration training for all doctoral entrants with foundational AI literacy, discipline-specific AI tool training, ethics of AI in research mandatory module, critical evaluation of AI-generated outputs, human verification protocols, and transparent documentation of AI usage; creating national research challenge databases where government agencies post urgent policy challenges, industry partners list innovation needs with deployment pathways, community organizations describe local problems, NGOs identify social challenge priorities, and indigenous communities articulate knowledge preservation needs.

Final systemic reform involves implementing a national blockchain verification infrastructure comprising a national research blockchain platform, timestamp services for all contributions and milestones, peer validation protocols at each research stage, portable verifiable competency portfolios, and international recognition and compatibility with GDPR compliance, ensuring data privacy.

Faculty Transition and Incentive Restructuring

The greatest obstacle to doctoral transformation isn't regulatory– it's cultural. Faculty who have built careers on hierarchical control will resist partnership models that distribute authority and make supervision transparent. The incentive problem is clear: supervision provides cheap labour for faculty research; traditional models concentrate prestige and power; partnership requires genuine collaboration, not delegation; AI threatens to expose faculty knowledge gaps; horizontal relationships demand intellectual vulnerability; and design review boards reduce individual control.

The psychological barrier is significant: senior faculty invested decades in the traditional system, implying transformation invalidates their training; admission that AI handles tasks they spent years mastering threatens professional identity; fear of obsolescence if supervision becomes optional; loss of status from 'training the next generation'; and resistance to acknowledging knowledge limitations publicly. The incentive solution requires restructuring academic rewards to promote faculty based on partnership ecosystem success rather than student completion count, reward collaborative capacity rather than paper authorship position, recognise facilitation of domain partnerships as a major contribution, value research impact and deployment over publication quantity, and create emeritus fellowships for design review board leadership.

Modified Academic Performance Indicators should include partnership facilitation in API scores, count design review board participation as teaching load, recognise open-source contributions and reproducibility efforts, value community engagement and indigenous knowledge partnerships, and reward transparent methodology and data sharing. NAAC criteria evolution must include problem-pack program availability in accreditation, assess institutional support for supervisor-optional pathways, evaluate blockchain verification infrastructure, measure research deployment and impact beyond publications, and recognise indigenous knowledge partnerships.

Faculty capacity building requires training programs in AI tool proficiency for research guidance, horizontal collaboration skill development, design review board facilitation training, indigenous knowledge partnership protocols, and ethical oversight in AI-integrated research. Cultural transformation requires modelling vulnerability in leadership where senior faculty acknowledge knowledge limitations publicly, creating safe spaces for faculty to discuss challenges with new models, celebrating partnership successes through institutional recognition and rewards, sharing failure stories to normalise learning

and iteration, and building communities of practice for transformed supervision where faculty support each other through transition.

Policy Recommendations for UGC/VBSA

Ten specific reforms address doctoral transformation at the policy level, positioning India not as a follower adopting Western models with delays, but as a leader establishing new paradigms honouring indigenous knowledge, embracing AI acceleration, and producing researchers who create measurable impact rather than accumulate publications. The economic and strategic necessity is clear: traditional doctoral programs cost $200,000–400,000 per graduate over 6- 8 years in high-income countries (OECD, 2023; and Council of Graduate Schools, 2022) while problem-packed programs enable a potential 40- 60% cost reduction with faster time to productive research contribution.

The competitiveness challenge is urgent: countries implementing AI-integrated doctoral systems first capture disproportionate advantages similar to Silicon Valley's ecosystem attraction of global innovation talent. India's choice is binary: lead the transformation or follow Western models with a 10-year delay. The window for leadership spans 2025-2035, after which patterns solidify, and late adopters face permanent disadvantage. Current crisis factors include risk aversion favouring safe incremental research over breakthrough innovation, disciplinary silos discouraging boundary-crossing innovation, technological lag rendering training obsolete by graduation, and detachment from urgent societal challenges.

Problem-pack solutions reward innovation over endurance, enable rapid research cycles through AI acceleration, connect research directly to authentic challenges, and verify contribution through deployment rather than defence. Global challenges requiring immediate response include climate change adaptation for Indian agriculture, pandemic preparedness and rural healthcare systems, sustainable urbanisation for a billion-person nation, water security and resource management, educational transformation for the AI age, and indigenous knowledge preservation and validation. These challenges cannot wait for 6-year dissertation timelines. Traditional doctoral training is structurally incompatible with urgency.

Conclusion: The 2047 Imperative

India's National Education Policy 2020 provides a foundation with 4-year research-integrated undergraduate programs and an emphasis. The missing link is doctoral flexibility. By 2047, India's centenary of independence, the *Viksit Bharat* vision requires researchers who create paradigms rather than follow them, solve authentic challenges rather than defend dissertations, bridge indigenous and scientific knowledge systems, collaborate globally while addressing local needs, and deploy solutions at scale rather than publish in isolation.

The window is narrow: 2025-2035. During this decade, either we reimagine doctoral education for the AI age, or we train researchers for a world that no longer exists. The choice is to lead the global transformation of research education or follow Western models with decade-long delays, perpetually catching up rather than setting direction. The stakes are India's position as a knowledge economy leader versus perpetual dependence on research paradigms developed elsewhere.

What this transformation requires is institutional courage from autonomous universities to experiment, document rigorously, and share evidence openly– even when experiments fail because the cost of not innovating exceeds the cost of innovation failure; regulatory flexibility from University Grants Commission (UGC) and *Viksit Bharat Shiksha Adhisthan*(VBSA) Bill to enable rather than constrain transformation, recognizing that 2025 requires different structures than 1985 or even 2015; faculty evolution to embrace partnership over power, recognizing that facilitating breakthrough research creates more lasting legacy than maintaining hierarchical control; student agency where researchers demand authentic challenges, insist on evidence-based pathways, and refuse to accept obsolete training structures; and stakeholder engagement where industry, government, communities, and indigenous knowledge holders participate in research partnerships rather than remaining external to academic processes.

These reforms are not aspirational innovations– they are inevitable adaptations to technological and societal realities. The only question is whether India shapes this transformation proactively or adapts reactively to changes initiated elsewhere. AI has made supervisor gatekeeping technologically obsolete. Global collaboration networks have made institutional isolation unnecessary. Digital infrastructure has democratized research capabilities. Indigenous knowledge preservation has become

urgent. Climate change and other grand challenges demand rapid, interdisciplinary solutions. The transformation will happen– through our leadership or despite our resistance.

This historic opportunity is comparable to land-grant universities democratising higher education, graduate research programs establishing knowledge creation as an institutional mission, and the development of the modern PhD system enabling specialised expertise. Countries that pioneer AI-integrated, problem-based, evidence-validated doctoral education will establish themselves as research leaders for the next century. India has the opportunity, infrastructure, indigenous knowledge systems, and policy frameworks to lead this transformation. The question is not whether India can lead. The question is whether we dare to reimagine doctoral education fundamentally rather than tinker at the margins. The AI age doesn't wait for committee approvals. The transformation begins now– with or without us.

References and Readings

1. Agrawal, A. (2002). Indigenous Knowledge and the Politics of Development, *Critique of Anthropology*, 22(2), 141-164.
2. Anderson, L., W., and Krathwohl, D., R. (Eds.). (2001). A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives, Longman.
3. Ashby, M., F., and Jones, D., R., H. (2012). Engineering Materials, Butterworth-Heinemann.
4. Blaschke, L., M. (2012). Heutagogy and Lifelong Learning: A Review of Heutagogical Practice and Self-Determined Learning, *The International Review of Research in Open and Distance Learning,* 13(1), 56-71.
5. Blaschke, L., M., and Hase, S. (2016). Heutagogy: Active, Self-directed Learning for the Digital Age, *Educational Technology & Society*, 19(4), 215-226.
6. Budynas, R., G., and Nisbett, J., K. (2020). Shigley's Mechanical Engineering Design, McGraw-Hill.
7. Djulbegovic, B., and Guyatt, G., H. (2017). Progress in Evidence-Based Medicine: A Quarter Century On, *The Lancet*, 390(10092), 415-423.
8. Evans, C., and Weil, S. (2005). Part-time Business and Management Students: How do They Experience Life and Learning? *Journal of Management Development*, 24(3), 230-243.
9. Foucault, M. (1980). Power/Knowledge: Selected Interviews and Other Writings 1972-1977, Pantheon Books.
10. Goodfellow, I., Bengio, Y., and Courville, A. (2016). Deep Learning, MIT Press.
11. Government of India (2020). National Education Policy 2020, Ministry of Education, Government of India, New Delhi. Retrieved January 2026 from *https://www.education.gov.in*
12. Greenhalgh, T., and Worrall, G. (1997). From EBM to CSM: The Evolution of Context-sensitive Medicine, *Journal of Evaluation in Clinical Practice*, 3(2), 105-108.
13. Ioannidis, J., P. (2005). Why Most Published Research Findings are False, *PLOS Medicine*, 2(8), e124.
14. IPCC. (2021). Climate Change 2021: The Physical Science Basis. Cambridge University Press.
15. Knowles, M., S. (1984). Andragogy in Action: Applying Modern Principles of Adult Learning, Jossey-Bass.
16. Kuhn, T., S. (1962). The Structure of Scientific Revolutions, University of Chicago Press.
17. LeCun, Y., Bengio, Y., and Hinton, G. (2015). Deep Learning, *Nature,* 521, 436-444.
18. Moore, M., G., and Kearsley, G. (2011). Distance Education: A Systems View of Online Learning (3rd ed.), Cengage Learning.
19. Nettles, M. T., and Millett, C. M. (2006). Three Magic Letters: Getting to Ph.D. Johns Hopkins University Press.
20. Russell, S., and Norvig, P. (2020). Artificial Intelligence: A Modern Approach (4th ed.), Pearson.
21. Sabatier, P., A., and Weible, C., M. (2014). Theories of the Policy Process (3rd ed.), Westview Press.
22. Saxena, N. (2025a). To Learn Using AI, You Must Go Down, not UP! [Conceptual blog essay], *Education2047. https://nrj2000.blogspot.com* (Retrieved January 2026)
23. Saxena, N. (2025b). The Great Reversal: When Everything We Know About Education Turns Upside Down [Conceptual LinkedIn article]. *https://www.linkedin.com/pulse/age-reversals-when-everything-we-know-education-turns-saxena-kcplc*
24. Saxena, N. (2025c). The Quiet Revolution: How Everyday Practices can Transform Higher Education for the AI Age [Conceptual blog essay]. *https://nrj2000.blogspot.com/2025/10/everydaypracticesfortransforminghighereducation.html*
25. Schlagwein, D. (2018). Escaping the Metaphor 'Digital Transformation': Refocusing on Material Conditions of Digital Scholarship, *First Monday*, 23(7).
26. Smith, L., T. (2012). Decolonising Methodologies: Research and Indigenous Peoples (2nd ed.), Zed Books.
27. Steffen, W., et al. (2015). Planetary Boundaries: Guiding Human Development on a Changing Planet, *Science,* 347(6223).
28. Sutton, R., S., and Barto, A., G. (2018). Reinforcement Learning: An Introduction (2nd ed.), MIT Press.

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Enhancing Teaching Excellence through Outcome-based Education and the NEP—2020 Framework

H R Mahadevaswamy*

'The convergence of Outcome-Based Education and the National Education Policy–2020 has provided Indian universities with a strategic framework to reimagine teaching, learning, and institutional quality.'

India's higher education system is undergoing a profound transformation. As universities respond to global academic standards, technological disruption, and the evolving aspirations of learners, the focus has decisively shifted from teaching as information delivery to learning as capability development. In this context, Outcome-Based Education (OBE) and the National Education Policy—2020 (NEP-2020) together provide a comprehensive and forward-looking framework to enhance teaching excellence, academic relevance, and institutional quality. As Indian higher education undergoes a paradigm shift towards learner-centric, outcome-driven models, universities are increasingly called upon to translate national policy frameworks into meaningful academic practice.

Teaching Excellence in the Contemporary Higher Education Landscape

Teaching excellence today extends far beyond classroom instruction. It encompasses curriculum relevance, learner engagement, assessment integrity, mentoring effectiveness, industry alignment, research integration, and ethical grounding. Faculty members are no longer mere transmitters of content; they are *facilitators of learning, mentors, innovators, and academic leaders*.

OBE provides a structured approach to achieving this transformation by clearly defining learning outcomes and aligning curriculum design, pedagogy, and assessment with these outcomes. It ensures that students graduate with demonstrable knowledge, skills, values, and professional competencies. NEP 2020 complements OBE by advocating:

- Multidisciplinary and holistic education.
- Flexible curricular structures with multiple entry–exit options.
- Experiential and skill-based learning.
- Technology-enabled teaching and digital integration.
- Continuous professional development of faculty.

Together, OBE and NEP–2020 move institutions towards a *learner-centric, inclusive, and future-ready education ecosystem.*

Faculty as the Central Pillar of Educational Reform

While policies and frameworks provide direction, *faculty engagement determines success*. Universities must therefore consciously invest in creating an enabling academic environment that encourages faculty members to embrace pedagogical innovation. Key institutional strategies to encourage faculty include:

- Continuous, structured faculty development programmes aligned with OBE and NEP-2020 priorities.
- Mentoring systems for early-career faculty and peer-learning communities.
- Recognition of teaching innovation in appraisal and promotion systems.
- Institutional support for industry engagement, research-led teaching, and interdisciplinary collaboration.
- Opportunities for reflective practice, feedback, and academic leadership.

When faculty feel supported, respected, and empowered, reforms translate into meaningful classroom transformation.

JSS University, Noida: Translating Policy into Practice

At *JSS University, Noida,* enhancing teaching excellence has been pursued as a *strategic institutional mission* rather than a compliance exercise. Recognising that sustainable quality enhancement requires collective ownership, the University designed and implemented a 2½-day Structured Faculty Development Programme (SDP)

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titled *"Enhancing Teaching Excellence through OBE & NEP-2020 Framework"* in January 2026.

This SDP was conceived as a capacity-building and culture-shaping initiative, aimed at equipping faculty with conceptual clarity, practical tools, and a shared vision of teaching excellence (Box 1).

Box 1: Institutional Case Highlight

From Good Teaching to Great Learning: JSS Faculty Transformation Journey 2026

With the divine blessings of *His Holiness Jagadguru Sri Shivarathri Desikendra Swamiji* and under the leadership of *Hon'ble Pro Chancellor Dr. B. Suresh*, JSS University, Noida organised a 2½-day Faculty Development Workshop (28–30 January 2026) on *Enhancing Teaching Excellence through OBE and NEP 2020*. Aligned with the vision of *Hon'ble Vice Chancellor Dr. H. R. Mahadevaswamy*, the initiative engaged 200+ faculty members in expert-led, activity-based learning focused on curriculum design, mentoring, industry integration, assessment reform, digital pedagogy, and OBE implementation—demonstrating effective policy-to-practice translation and a measurable shift towards outcome-driven, university-level academic culture.

Sustained investment in faculty development, reflective practice, and continuous quality improvement will remain central to building universities that are resilient, relevant, and globally competitive. When teaching excellence is approached as an institutional culture rather than an isolated initiative, it becomes a powerful driver of meaningful student outcomes and academic distinction.

Dr. H. R. Mahadevaswamy, Vice Chancellor, JSS University, Noida

The effective translation of OBE and NEP–2020 into everyday academic practice ultimately defines the success of higher education reforms and the future readiness of institutions. Such initiatives reaffirm the role of universities as key enablers of India's aspiration to emerge as a global knowledge leader through quality-driven and outcome-oriented education.

Dr. B. Suresh, Pro Chancellor, JSS University, Noida

Design and Academic Focus of the SDP

The programme brought together eminent academicians from premier institutions and experienced industry professionals. The academic design of the SDP addressed the entire teaching–learning value chain, including:

- ***Curriculum Design under NEP-2020***: Multidisciplinary structures, flexibility, Academic Bank of Credits, and experiential learning integration
- ***Effective Mentoring and Student Engagement***: Identifying learner diversity, personalised mentoring, inclusive teaching, and trust-based academic culture
- ***Industry-Integrated Teaching Practices***: Case-based learning, live projects, capstone models, and curriculum co-design with industry
- ***Research and Innovation in the Classroom***: Linking teaching with research outcomes, student innovation, and entrepreneurial thinking
- ***Innovative Assessment and Feedback Strategies***: Rubric-based evaluation, continuous internal assessment, and outcome *mapping*
- ***Technology-Enabled Pedagogy***: LMS usage, blended and flipped classrooms, virtual labs, OERs, and AI-assisted teaching tools
- ***OBE Implementation and CQI***: CO–PO–PSO mapping, attainment analysis, documentation practices, and continuous quality improvement cycles

The programme concluded with a *panel discussion focused on building a JSS University Teaching Excellence Model,* reinforcing institutional alignment and shared academic responsibility.

Impact and Outcomes

The SDP led to measurable and perceptible outcomes:

- Enhanced faculty competence and confidence in OBE and NEP–2020 implementation
- Improved course planning, assessment design, and learner feedback mechanisms
- Greater integration of industry relevance and research orientation in teaching
- Strengthened readiness for accreditation and quality assurance processes
- Emergence of a reflective academic culture emphasising continuous improvement

More importantly, it fostered a *sense of collective purpose* among faculty members, reinforcing the idea that teaching excellence is both

an individual responsibility and an institutional commitment.

The success of this initiative was greatly strengthened by the exemplary contributions of the distinguished resource persons and the unwavering commitment of the organising team. The eminent academicians and industry experts brought depth, clarity, and practical relevance to the discourse on OBE and NEP- 2020, enabling faculty members to critically engage with contemporary pedagogical challenges and translate national policy aspirations into effective classroom practices. Equally noteworthy was the academic leadership, careful planning, and coordinated efforts of the organisers and conveners, whose dedication ensured a well-structured, participative, and outcome-oriented programme. Their collective endeavour not only enhanced the intellectual rigor of the SDP but also reinforced a shared institutional culture of collaboration, reflection, and teaching excellence at JSS University, Noida.

Lessons for the Higher Education Community

The experience of JSS University, Noida, offers important insights for universities across the country:

- Teaching excellence initiatives must be *systemic, sustained, and faculty-centric*
- Faculty development should focus on practical application, not only on policy awareness
- Leadership commitment and institutional vision are critical to cultural change
- OBE and NEP–2020 are most effective when integrated into everyday academic practice

Conclusion

As India aspires to become a global knowledge leader, universities must reimagine teaching as a *dynamic, reflective, and outcome-driven process*. OBE and NEP–2020 provide a robust framework to achieve this transformation, but their true potential is realised only through empowered faculty and committed institutions.

The journey of JSS University, Noida demonstrates that *investing in faculty development, fostering academic collaboration, and embedding continuous quality improvement can meaningfully elevate teaching excellence*. Such initiatives not only enhance student learning outcomes but also strengthen the moral and intellectual foundations of higher education.

"In an era marked by rapid academic, technological, and societal change, institutional leadership and faculty capability have become central to sustaining excellence in higher education." ❑

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29. Todd, Z. (2016). An Indigenous Perspective on Research Ethics, *Journal of Research Practice*, 12(1), Article E1.
30. Turnbull, D. (2000). Masons, Tricksters and Cartographers: Comparative Studies in the Sociology of Scientific and Indigenous Knowledge, Harwood Academic Publishers.
31. UGC (2022). University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulations, 2022. Retrieved January 2026 from *https://www.ugc.gov.in*
32. Wenger, E. (1998). Communities of Practice: Learning, Meaning, and Identity, Cambridge University Press.
33. Wuchty, S., Jones, B., F., and Uzzi, B. (2007). The Increasing Dominance of Teams in Production of Knowledge, *Science*, 316(5827), 1036-1039.
34. Council of Graduate Schools (2022). PhD Completion and Attrition: Analysis of Baseline Demographic Data, Washington, DC: CGS.
35. Grech, A., and Camilleri, A., F. (2017). Blockchain in Education, Publications Office of the European Union. *https://doi.org/10.2760/60649*
36. Lee, A., and Murray, R. (2015). Supervising Writing: Helping Postgraduate Students Develop as Researchers, *Innovations in Education and Teaching International*, 52(5), 558-570.
37. Lund, B., D., and Wang, T. (2023). Chatting about ChatGPT: How may AI and GPT Impact Academia and Libraries? Library Hi Tech News, 40(3), 26-29. *https://doi.org/10.1108/LHTN-01-2023-0009*
38. Maxwell, T., W., and Kupczyk-Romanczuk, G. (2009). Producing the Professional Doctorate: The Portfolio as a Legitimate Alternative to the Dissertation, *Innovations in Education and Teaching International*, 46(2), 135-145.
39. OECD (2023). Education at a Glance 2023: OECD Indicators, OECD Publishing. *https://doi.org/10.1787/e13bef63-en*
40. Zawacki-Richter, O., et al. (2019). Systematic Review of Research on Artificial Intelligence Applications in Higher Education—Where are the Educators? *International Journal of Educational Technology in Higher Education*, 16, 39. *https://doi.org/10.1186/s41239-019-0171-0*

[The views expressed in this article are personal] ❑

Medical Education in the United States: From College Student to Independent Physician

Maharaj Singh*

Introduction

Medical education is among the most demanding forms of professional preparation. Physicians are entrusted with responsibilities that directly affect human health, quality of life, and survival. Consequently, medical education systems seek to ensure that graduates possess not only scientific knowledge and clinical competence but also professionalism, ethical judgment, communication skills, and a commitment to lifelong learning (Box-1).

The United States has developed one of the world's most structured and comprehensive systems of physician training. Unlike many countries, including India, where students enter medical school directly after secondary education, American students first complete a four-year undergraduate degree before applying to medical school. As a result, the pathway to independent medical practice typically requires 11 to 15 years of education and supervised clinical training after high school (Box 2).

Box 1. Key Highlights

- Becoming a physician in the United States typically requires 11–15 years of education and training after high school.
- Students complete a four-year undergraduate degree before applying to medical school.
- Admission is based on academic performance, MCAT scores, clinical exposure, research, leadership, and service.
- Medical school leads to either a Doctor of Medicine (MD) or Doctor of Osteopathic Medicine (DO) degree.
- Residency training is required for all physicians and lasts 3–7 years depending on speciality.
- Fellowship training provides additional subspecialization.
- Board certification and lifelong learning are central features of professional practice.
- Artificial intelligence, digital health, and precision medicine are reshaping physician education and practice.

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The modern American system was heavily influenced by the landmark Flexner Report, which transformed medical education by emphasising scientific rigour, university-based training, laboratory sciences, and evidence-based medicine (Flexner, 1910). During the past century, medical education has evolved further to incorporate competency-based assessment, simulation training, interprofessional education, healthcare quality, patient safety, and digital technologies. Accreditation standards established by organisations such as the Liaison Committee on Medical Education (LCME) help maintain consistency and quality across medical schools (LCME, 2024).

Medical education continues to evolve in response to changing healthcare needs. Artificial intelligence, telemedicine, precision medicine, and healthcare analytics are transforming clinical practice. At the same time, physician workforce shortages, particularly in primary care and rural communities, have prompted renewed attention to healthcare workforce development (AAMC, 2024).

Understanding the American model provides valuable insight into how one of the world's largest healthcare systems prepares its physician workforce. This article outlines the major stages of physician education and training, from undergraduate preparation to independent clinical practice (Box 2).

Undergraduate Education: The Foundation

The journey toward becoming a physician in the United States begins at the undergraduate level. Prospective physicians are required to complete a four-year bachelor's degree from an accredited college or university before applying to medical school. This requirement reflects the belief that future physicians benefit from a broad educational foundation and greater intellectual maturity before beginning professional medical training.

One distinctive feature of the American system is that students are not required to major in a specific subject. While many choose biology, chemistry, psychology, engineering, or public health, medical schools accept applicants from a wide range of academic disciplines. Admissions committees

Box 2. Medical Education in India and the United States: Key Differences

Feature	India	United States
Entry into Medical School	After Grade 12	After Completion of Bachelor's Degree
Admission Examination	NEET-UG	MCAT (Medical College Admission Test)
Initial Medical Degree	MBBS	MD or DO
Duration Before Independent Practice	Approximately 5.5 years plus postgraduate training	Typically 11–15 years after high school
Residency Training	Specialty training after MBBS	Required for all physicians
Board Certification	Specialty examinations vary by field	National specialty board certification
Educational Philosophy	Early entry into professional training	Broad undergraduate education followed by professional training
Licensure Pathway	National and state requirements	USMLE/COMLEX, residency, board certification, state licensure
Common Career Pathways	Clinical practice, academics, research, administration	Clinical practice, academics, research, administration, public health, industry

generally value intellectual diversity and strong academic performance rather than a particular major.

Regardless of major, students must complete a series of prerequisite courses, typically including biology, chemistry, organic chemistry, physics, biochemistry, mathematics, statistics, psychology, sociology, and English composition. Laboratory experiences are especially important because they introduce students to scientific inquiry and evidence-based reasoning.

Academic performance is a critical component of medical school preparation. Admissions committees closely examine grade point averages, particularly in science courses. However, medical schools increasingly emphasise holistic review, recognising that successful physicians require more than academic ability alone.

Students are therefore encouraged to participate in activities beyond the classroom. Research experiences expose students to scientific inquiry and analytical thinking. Clinical experiences, including hospital volunteering and physician shadowing, help students gain firsthand exposure to patient care. Community service activities foster empathy and social responsibility, while leadership experiences demonstrate initiative and teamwork.

Many universities provide structured premedical advising programs that help students select coursework, identify research opportunities, prepare for the Medical College Admission Test (MCAT), and navigate the medical school application process.

The undergraduate years serve multiple purposes. They provide the scientific foundation necessary for medical education, encourage personal and intellectual development, and help students determine whether medicine is truly the right career path.

Medical School Admission: A Highly Competitive Process

Admission to medical school in the United States is highly competitive. Each year, tens of thousands of applicants compete for a limited number of positions in MD and DO programs. Admissions committees seek applicants who demonstrate academic excellence, professionalism, leadership, compassion, and commitment to service.

Unlike admission systems that rely primarily on examination scores, American medical schools employ a holistic review process. Applicants are evaluated based on academic performance, standardised test scores, research experiences, clinical exposure, volunteer activities, leadership experiences, letters of recommendation, personal statements, and interviews (Box 3).

The Medical College Admission Test (MCAT), administered by the Association of American Medical Colleges, is a standardised examination that evaluates scientific knowledge, critical reasoning, and problem-solving ability. The examination covers

Box 3. Key Components of a Medical School Application

Academic Performance
- Undergraduate Grade Point Average (GPA)
- Strong performance in science prerequisite courses
- Evidence of academic rigor and intellectual curiosity

Standardized Testing
- Medical College Admission Test (MCAT)
- Assessment of scientific knowledge, critical reasoning, and problem-solving skills

Clinical Experience
- Hospital or clinic volunteering
- Physician shadowing
- Patient care and healthcare exposure

Research Experience
- Laboratory, clinical, public health, or translational research
- Scientific presentations or publications (when available)

Leadership and Service
- Student organizations
- Community engagement and volunteer service
- Leadership roles and teamwork experiences

Personal Attributes
- Communication skills
- Professionalism and ethical behavior
- Resilience, empathy, and commitment to service

Application Materials
- Letters of recommendation
- Personal statement
- Secondary application essays

Interview Process
- Traditional interviews and/or Multiple Mini Interviews (MMIs)
- Evaluation of interpersonal skills, professionalism, and motivation for medicine

biological sciences, physical sciences, behavioural sciences, and critical analysis. Strong MCAT performance significantly improves an applicant's competitiveness.

Beyond academic metrics, medical schools expect evidence of clinical exposure. Applicants are encouraged to volunteer in hospitals, clinics, community health centres, or public health programs. Research experience is also highly valued, particularly at research-intensive institutions.

Community service and leadership activities receive considerable attention because physicians frequently serve vulnerable populations and work within multidisciplinary teams. Admissions committees seek applicants who demonstrate compassion, resilience, communication skills, and commitment to helping others.

Applicants typically submit their materials through centralised application systems such as the American Medical College Application Service (AMCAS) for MD programs and AACOMAS for DO programs. Following initial review, many schools require secondary applications and interviews.

Medical school admission is therefore far more than an academic competition. It represents a comprehensive assessment of an individual's intellectual capabilities, professional potential, personal qualities, and readiness to enter one of the most demanding professions in society.

MD and DO Programs: Two Pathways to Physician Licensure

One of the unique features of medical education in the United States is the existence of two pathways leading to physician licensure: the Doctor of Medicine (MD) degree and the Doctor of Osteopathic Medicine (DO) degree. Although both pathways produce fully licensed physicians with identical legal practice rights, they differ somewhat in historical origins and educational philosophy.

The MD degree represents the traditional allopathic model of medicine and is the pathway most familiar to international audiences. MD programs are accredited by the Liaison Committee on Medical Education (LCME) and are generally affiliated with universities, academic medical centres, and research institutions. The curriculum emphasises biomedical sciences, evidence-based medicine, clinical reasoning, and patient care.

The DO degree is awarded by colleges of osteopathic medicine accredited by the Commission on Osteopathic College Accreditation (COCA). Osteopathic medicine was founded in the late nineteenth century by Dr Andrew Taylor Still, who advocated a holistic approach to healthcare that emphasised the body's ability to heal itself and the relationship between structure and function in maintaining health. Today, osteopathic medicine incorporates all aspects of modern scientific medicine while retaining its emphasis on whole-person care.

Historically, MD and DO programs differed considerably. However, these differences have narrowed substantially over time. Both pathways now require four years of medical school, national licensing examinations, residency training, and continuing professional development. Graduates of both programmes compete for the same residency positions and may practice in all medical and surgical specialities(Box 4).

Box 4. MD *VS*. DO: What is the Difference?

MD (Doctor of Medicine)	DO (Doctor of Osteopathic Medicine)	Common Features
• Traditional allopathic medical education • Strong emphasis on biomedical sciences and evidence-based medicine • Accredited by LCME • Offered at approximately 155 U.S. medical schools	• Holistic approach emphasising whole-person care • Includes Osteopathic Manipulative Treatment (OMT) • Accredited by COCA • Offered at more than 40 colleges of osteopathic medicine	• Four years of medical school • Clinical clerkships and patient care training • Residency training • Physician licensure • Board certification • Full practice rights in all specialities

A distinctive feature of osteopathic education is training in Osteopathic Manipulative Treatment (OMT), a hands-on approach used to diagnose and treat certain musculoskeletal conditions. Although OMT remains part of osteopathic training, modern DO physicians prescribe medications, perform procedures, interpret diagnostic tests, and practice medicine in the same manner as their MD colleagues.

The growth of osteopathic medicine has been one of the most significant developments in American healthcare education during the past two decades. Enrollment in osteopathic medical schools has increased steadily in response to physician workforce shortages and growing demand for healthcare services. According to the American Association of Colleges of Osteopathic Medicine (AACOM, 2024), more than one-quarter of U.S. medical students are now enrolled in osteopathic programs.

Both MD and DO curricula have evolved considerably in recent years. Traditional lecture-based instruction has increasingly been supplemented by team-based learning, simulation exercises, case discussions, virtual anatomy laboratories, and technology-enhanced education. Medical schools are also placing greater emphasis on communication skills, healthcare quality, patient safety, population health, leadership, and health equity.

Box 5. Emerging Topics in Medical Education

- Artificial Intelligence and Machine Learning
- Precision and Personalised Medicine
- Healthcare Quality and Patient Safety
- Population Health and Preventive Medicine
- Health Equity and Social Determinants of Health
- Telemedicine and Digital Health
- Interprofessional Education
- Evidence-Based Clinical Decision Making

Regardless of pathway, the goal of medical education remains the same: preparing physicians who are scientifically knowledgeable, clinically competent, compassionate, and capable of adapting to rapidly changing healthcare environments. Understanding the MD and DO pathways provides important context for the next stage of training—the four years of medical school, where students begin the transition from learners to physicians-in-training.

The Four Years of Medical School: From Classroom Learning to Clinical Practice

Admission to medical school marks the beginning of one of the most intensive and transformative phases of physician education. Over four years, students progress from learning the scientific foundations of medicine to providing direct patient care under supervision. Although individual schools vary in curriculum design, most American medical schools follow a structure that combines two years of primarily classroom-based learning with two years of clinical training (Box 6).

Medical education today differs significantly from the traditional lecture-centred model. Modern curricula increasingly integrate biomedical sciences with clinical medicine from the first year. Students encounter patient cases early in their training and learn to apply scientific knowledge to real-world clinical problems. The emphasis is not only on acquiring knowledge but also on developing critical

thinking, communication skills, professionalism, and clinical reasoning.

Box 6. The Four Years of Medical School

Years 1–2: Preclinical Education	Years 3–4: Clinical Education
• Biomedical sciences • Clinical skills training • Patient communication • Early clinical exposure • Preparation for licensing examinations	• Clinical clerkships • Specialty rotations • Direct patient care • Residency preparation • Advanced electives and sub-internships

Years 1 And 2: Building the Scientific Foundation

The first two years of medical school focus on understanding normal human biology, disease processes, diagnosis, and treatment. Students study subjects such as anatomy, physiology, pathology, pharmacology, microbiology, immunology, genetics, neuroscience, epidemiology, and behavioural sciences.

Unlike undergraduate education, medical school curricula are often organised by organ systems rather than individual disciplines. Students may study the cardiovascular system by integrating anatomy, physiology, pathology, pharmacology, and clinical medicine into a unified learning experience. Similar approaches are used for respiratory, gastrointestinal, neurological, endocrine, renal, and musculoskeletal systems.

Medical schools increasingly utilise active learning approaches including case-based learning, team-based learning, simulation exercises, and problem-solving sessions. Students learn not only scientific facts but also how to apply them in clinical decision-making.

Early clinical exposure has become a defining feature of contemporary medical education. Students begin learning how to obtain patient histories, perform physical examinations, communicate effectively, and document clinical encounters. Many schools employ standardized patients—trained individuals who simulate medical conditions—to help students practice clinical skills in a safe educational environment.

During these years, students also prepare for national licensing examinations. MD students take components of the United States Medical Licensing Examination (USMLE), while DO students complete the Comprehensive Osteopathic Medical Licensing Examination (COMLEX-USA). These examinations assess scientific knowledge, clinical reasoning, and readiness for clinical training.

Years 3 and 4: Clinical Clerkships

The transition from classroom learning to patient care occurs during the clinical years. Students rotate through hospitals, clinics, emergency departments, and community healthcare settings under the supervision of attending physicians and residents (Box 7).

Box 7: Core Clinical Rotations

Internal Medicine : Diagnosis and management of adult diseases

Surgery : Operative and perioperative patient care

Pediatrics : Healthcare of infants, children, and adolescents

Obstetrics and Gynecology: Women's health and childbirth

Psychiatry : Mental and behavioural healthcare

Family Medicine : Comprehensive primary care across the lifespan

These rotations expose students to diverse patient populations and healthcare environments. Students participate in patient interviews, physical examinations, clinical rounds, diagnostic evaluations, treatment planning, and interprofessional teamwork. Through direct patient care experiences, they learn that clinical medicine often involves uncertainty, incomplete information, and complex decision-making.

The fourth year provides opportunities for greater specialisation and professional development. Students complete advanced electives, sub-internships, and speciality-specific experiences that allow them to explore potential career paths. Some participate in research projects, global health initiatives, or public health programs.

The final year is also devoted to preparing for residency training. Students complete residency applications, obtain letters of recommendation, prepare personal statements, and participate in interviews through the National Residency Match Program.

Professional Development and Medical Identity

Medical school involves much more than acquiring scientific knowledge. Students learn professionalism, ethical decision-making, teamwork, cultural competence, and effective communication. Increasing attention is also being given to physician wellness, resilience, and burnout prevention.

Modern medical schools recognise that successful physicians must be able to work effectively within complex healthcare systems, collaborate with multidisciplinary teams, and adapt to rapid technological change. Consequently, topics such as healthcare quality, patient safety, leadership, health equity, and digital health are increasingly incorporated into the curriculum.

By graduation, students have completed thousands of hours of classroom instruction, simulation training, and supervised patient care. They possess the foundational knowledge and clinical skills necessary to begin residency training. However, graduation from medical school marks not the end of training, but the beginning of the next stage of physician development—residency, where medical graduates learn to practice medicine through intensive supervised clinical experience.

Residency Training, Specialization, and Professional Practice

Graduation from medical school represents an important milestone, but it does not permit physicians to practice independently. Newly graduated physicians must complete postgraduate training known as a residency before becoming fully qualified specialists. Residency is often considered the most intensive phase of physician education because it combines direct patient care with continuous learning and increasing professional responsibility.

Residency training serves as the bridge between medical school and independent clinical practice. During this period, physicians move from the role of student to that of physician-in-training. Working under the supervision of experienced attending physicians, residents diagnose illnesses, formulate treatment plans, perform procedures, manage emergencies, and coordinate patient care. The goal is to develop the clinical judgment, technical skills, professionalism, and confidence required for independent practice.

The National Residency Match Programme

One of the most distinctive features of American medical education is the National Residency Match Programme (NRMP), commonly known as "The Match." During their final year of medical school, students apply to residency programs throughout the country using the Electronic Residency Application Service (ERAS). Applications typically include academic records, licensing examination scores, letters of recommendation, research activities, and personal statements(Box 8).

After interviews are completed, applicants rank residency programs according to their preferences, while residency programs rank applicants. A computerised algorithm then matches applicants and programs. Match Day, held annually in March, is a major event in American medical education and marks the transition from medical student to resident physician.

Box 8. Typical Residency Lengths

Residency	Years
• Family Medicine	3
• Internal Medicine	3
• Pediatrics	3
• Emergency Medicine	3–4
• Psychiatry	4
• Obstetrics and Gynecology	4
• General Surgery	5
• Orthopedic Surgery	5
• Urology	5-6
• Neurosurgery	7

Residency training is highly immersive. Residents work in hospitals, clinics, emergency departments, and intensive care units while caring for patients under supervision. They admit patients, perform physical examinations, order diagnostic tests, interpret results, write clinical notes, participate in procedures, and coordinate care with nurses, pharmacists, therapists, and other healthcare professionals.

Modern residency programs are accredited by the Accreditation Council for Graduate Medical Education (ACGME), which establishes educational standards and competency requirements. Residents are evaluated not only on medical knowledge but also on patient care, communication skills, professionalism, systems-based practice, and continuous improvement.

Although residency remains demanding, regulations now limit work hours to improve physician wellness and patient safety. Current standards generally restrict residents to an average of 80 hours per week while requiring adequate time off between shifts.

Fellowship Training: Becoming a Specialist

After completing residency, many physicians choose to pursue fellowship training. Fellowships provide advanced education in highly specialised areas of medicine and typically require one to three additional years of training. Examples include: Cardiology, Gastroenterology, Pulmonary and Critical Care Medicine, Hematology-Oncology, Neonatology, Pediatric Cardiology, Vascular Surgery, and Surgical Oncology.

Fellows function as physicians with substantial expertise while continuing to learn under the supervision of recognised specialists. Fellowship training often includes advanced procedures, subspecialty patient care, research, teaching, and leadership development.

For many physicians, fellowship training serves as a pathway into academic medicine, clinical research, and highly specialised clinical practice.

Board Certification and Physician Licensure

Completion of training alone does not automatically confer specialist status. Physicians must demonstrate competence through board certification and state licensure (Box 9).

Board certification is administered by speciality-specific organisations such as the American Board of Internal Medicine, the American Board of Paediatrics, and the American Board of Surgery. To become board certified, physicians must complete accredited training programs and pass rigorous examinations assessing speciality knowledge and clinical competence.

Box 9 : Steps to Independent Physician Practice

1.	Undergraduate Degree (4 years)
2.	Medical School (4 years)
3.	Licensing Examinations
4.	Residency Training (3–7 years)
5.	Fellowship Training (Optional)
6.	Board Certification
7.	State Medical Licensure

Career Opportunities for Physicians

Many physicians pursue careers in academic medicine, combining clinical responsibilities with teaching and research. Academic physicians educate medical students, residents, fellows, nurses, and other healthcare professionals while contributing to scientific advancement through scholarship and research.

Others pursue careers in biomedical and clinical research, public health, healthcare administration, health policy, pharmaceutical development, biotechnology, or healthcare consulting. Increasingly, physicians are also involved in healthcare innovation, digital health, and artificial intelligence applications.

The diversity of career opportunities reflects the broad impact physicians can have on healthcare systems and society. Whether practising medicine, conducting research, leading healthcare organisations, or shaping public policy, physicians play essential roles in improving health outcomes and advancing medical knowledge.

Residency, fellowship, board certification, and continuing professional development collectively ensure that physicians are prepared to meet the complex demands of modern healthcare. These stages represent the final educational steps before entering independent practice and lifelong service to patients and communities.

The Future of Medical Education: Costs, Global Opportunities, and Artificial Intelligence

While the United States offers one of the world's most comprehensive systems of physician training, it is also among the most expensive. The financial cost of becoming a physician has become an important topic in discussions about healthcare workforce development and access to medical education.

Medical school tuition varies considerably, but annual costs frequently exceed $50,000 to $70,000, with total educational expenses often surpassing $300,000 over four years. Most students finance their education through federal student loans, scholarships, grants, and personal resources. Consequently, many physicians begin their careers with educational debt exceeding $200,000(Box 10).

Despite these costs, medicine remains an attractive profession because of its opportunities for

service, intellectual growth, professional stability, and societal impact. Scholarship programs, loan repayment initiatives, and service-based incentives have been developed to encourage physicians to work in underserved communities and reduce financial barriers to medical education.

Box 10 : The Cost of Medical Education

- Medical school tuition often exceeds $50,000–$70,000 per year
- Total educational expenses may exceed $300,000
- Many graduates carry debt exceeding $200,000
- Federal student loans remain the primary funding source
- Scholarships and grants are increasingly available
- Loan repayment programs support service in underserved communities

International Medical Graduates in the United States

The American healthcare system has long benefited from the contributions of International Medical Graduates (IMGs), who represent a substantial component of the physician workforce. Many physicians trained in India, Pakistan, the Philippines, Europe, Africa, and the Middle East pursue postgraduate training and careers in the United States.

For international graduates, the pathway to practice requires additional steps. Applicants must obtain certification through the Educational Commission for Foreign Medical Graduates (ECFMG), complete the United States Medical Licensing Examination (USMLE), and successfully compete for residency positions through the same residency matching process used by graduates of U.S. medical schools(Box 11).

Box 11 : Pathway for International Medical Graduates

1. Complete Medical Degree (MBBS or equivalent)
2. Obtain ECFMG Certification
3. Complete USMLE Examinations
4. Apply to Residency Programs through ERAS
5. Participate in the NRMP Match
6. Complete Residency Training
7. Obtain State Licensure and Board Certification

Although opportunities are substantial, international graduates often face challenges related to licensing examinations, visa requirements, financial costs, and intense competition for residency positions. Success requires careful planning, strong academic performance, and persistence.

Artificial Intelligence and the Future of Medicine

Artificial intelligence is already being used in radiology to assist with image interpretation, in pathology to identify disease patterns, and in predictive analytics to identify patients at risk for complications or hospital readmission. AI-powered documentation systems are helping reduce administrative burdens by assisting physicians with clinical note generation and information management.

Medical education is also evolving in response to these developments. Students increasingly learn using virtual patient simulations, adaptive learning platforms, intelligent tutoring systems, and technology-enhanced educational tools. As healthcare becomes more data-driven, physicians will require competencies in digital health, informatics, data analytics, and responsible AI use(Box 12).

Box 12 : Current Applications of AI in Medicine

- AI-assisted radiology interpretation
- Clinical decision-support systems
- Predictive analytics and risk modeling
- Medical documentation and note generation
- Precision medicine and genomics
- Telemedicine and remote monitoring
- Medical education simulations and virtual patients

At the same time, physicians must understand the ethical challenges associated with AI, including privacy, transparency, accountability, and algorithmic bias. The physician of the future will not be replaced by technology but will increasingly work alongside intelligent systems to improve healthcare quality and efficiency.

Lessons for Students Considering Medicine

For students contemplating a career in medicine, several lessons emerge from the American model. First, medicine is a long-term commitment that requires years of education, training, and continuous professional development. Second, academic excellence alone is insufficient; successful physicians

must demonstrate compassion, communication skills, professionalism, and dedication to service.

Research opportunities are abundant throughout medical education and provide pathways to innovation and discovery. Finally, medicine offers global opportunities for collaboration, education, research, and service that extend far beyond national boundaries.

Conclusion

The pathway from college student to independent physician in the United States is among the most structured and demanding educational journeys in higher education. Beginning with undergraduate preparation and continuing through medical school, residency, fellowship training, board certification, and lifelong learning, the system is designed to develop physicians who are scientifically knowledgeable, clinically competent, and professionally responsible.

The American model emphasises progressive responsibility, evidence-based practice, rigorous assessment, and continuous professional development. Although the pathway is lengthy and expensive, it has produced a highly trained physician workforce capable of addressing complex healthcare challenges.

For educators, students, and policymakers, the American experience provides valuable insight into how rigorous education, clinical training, scientific inquiry, and lifelong learning can be integrated to prepare physicians for the healthcare challenges of the twenty-first century.

References and Readings

1. Accreditation Council for Graduate Medical Education (2024). Common Programme Requirements, ACGME. Retrieved from *https://www.acgme.org*
2. American Association of Colleges of Osteopathic Medicine (2024). Osteopathic Medical Education and the Physician Workforce, AACOM. Retrieved from *https://www.aacom.org*
3. American Board of Medical Specialities (2024). Board Certification Standards and Programs, ABMS. Retrieved from *https://www.abms.org*
4. Association of American Medical Colleges (2024). Medical School Admission Requirements (MSAR). Washington, DC: Association of American Medical Colleges.
5. Association of American Medical Colleges (AAMC). (2024). The Complexities of Physician Supply and Demand: Projections from 2021 to 2036. Washington, DC: Association of American Medical Colleges.
6. Educational Commission for Foreign Medical Graduates (2024). Certification of International Medical Graduates, ECFMG. Retrieved from *https://www.ecfmg.org*
7. Flexner, A. (1910). Medical Education in the United States and Canada: A Report to the Carnegie Foundation for the Advancement of Teaching, New York: Carnegie Foundation.
8. Liaison Committee on Medical Education (2024). Functions and Structure of a Medical School: Standards for Accreditation of Medical Education Programs Leading to the MD Degree. Washington, DC: LCME.
9. National Academy of Medicine (2021). Implementing High-Quality Primary Care: Rebuilding the Foundation of Health Care, Washington, DC: National Academies Press.
10. National Resident Matching Program (2024). Results and Data: 2024 Main Residency Match. Washington, DC: National Resident Matching Programme.
11. Still, A., T. (1899). Philosophy of Osteopathy, Kirksville, MO: Published by the Author.
12. United States Medical Licensing Examination (2024). Bulletin of Information. Retrieved from *https://www.usmle.org* ❑

Transforming Education: Prof. G. Ram Reddy's Legacy and Vision

Pankaj Arora, Chairperson, National Council for Teacher Education, New Delhi, delivered the Chief Guest Address at the 31st Prof. G. Ram Reddy Memorial Lecture at Indira Gandhi National Open University, New Delhi, on July 02, 2026. He said, *"Technology must remain a tool in the hands of teachers. It cannot become a substitute for teachers. As NEP—2020 rightly emphasises, technology should support pedagogy, not drive pedagogy. Hamara Laksya "Digital First" nahi balki, "Learner First" hona chahiye. Technology should strengthen human connections in education, not weaken them."* Excerpts

It is indeed a privilege and an honour to join all of you for the 31st Prof. G. Ram Reddy Memorial Lecture. I congratulate IGNOU for sustaining this remarkable tradition of remembering and celebrating one of India's greatest educationists and one of the foremost architects of the Open and Distance Learning movement.

Today's event is not merely a lecture of remembrance. It is an opportunity to revisit an educational philosophy that transformed the meaning of access, equity and lifelong learning in India. What we have seen and heard since morning—a short video presenting some glimpses of Professor Reddy as a visionary leader, and the university's anthem (*Kulgeet*)—felt very inspiring to me. The selection of words in it has been done very thoughtfully, and it truly represents the ethos of the university, *Jan-Jan Ka Vishwavidyalaya*, ie—education for all.

Since morning, the terms 'open and distance learning', 'open university', etc., were being used in the specific context of open education. But I believe that all educational institutions should be "open" institutions; "open" should not just be in their name, it should be in their thoughts, practice and culture as well. So, on this occasion today, we shall revisit the educational philosophy that transformed the meaning of access, equity, and lifelong learning in India.

Remembering Prof. G. Ram Reddy

Prof. G. Ram Reddy was not merely an academic administrator; he was a visionary, an institution builder, and most importantly, he was a firm believer in the democratisation of education. At a time when higher education was largely confined to physical campuses and urban centres, Prof. Reddy imagined a system where education could reach the learner, instead of forcing the learner to reach the educational institutions physically for learning. As the founding Vice Chancellor of India's first Open University in Andhra Pradesh and later as the founding Vice Chancellor of IGNOU, he laid the foundations of a movement that continues to transform millions of lives.

The key educational principles and concepts, such as flexibility, lifelong learning, learner-centric education, multidisciplinary approaches, digital learning, and anytime-anywhere learning, that the National Education Policy- 2020 emphasises today reflect, to a significant extent, the visionary educational philosophy of Prof. G. Ram Reddy. His foresight anticipated many of the transformative ideas that now underpin India's higher education reforms. In many respects, the educational landscape of today is steadily evolving toward the vision that Prof. Reddy had imagined and advocated decades ago.

Open and Distance Learning

There is a popular quote of Swami Vivekananda, I quote, "If the learner cannot come to education, education must go to the learner." I Unquote. This is not merely a slogan; it is the very philosophy of Open and Distance Learning (ODL). ODL does not compromise on quality. Rather, it expands access to quality educational opportunities. As I often say, "Distance in geography should never become distance in opportunity." In a vast and culturally diverse country like India, this philosophy assumes immense significance.

For a country as vast and diverse as India, this vision holds profound significance, as it ensures that educational opportunities can reach learners across geographical, social, and economic boundaries. Today, more than 10 crore learners globally are

benefiting from various forms of Open, Distance and Online Learning. India is proud to host one of the world's largest open universities — IGNOU — serving nearly 30 lakh learners through its extensive network of Regional Centres and Learner Support Centres.

Friends, India is a country of extraordinary diversity. Our learners come from different geographies, languages, socio-economic realities and life circumstances;

- for many learners, conventional education is not always possible;
- some are working;
- some are supporting families;
- some live in remote locations;
- some have interrupted their education due to social or economic reasons.

For them, Open and Distance Learning is not an alternative;

it is an opportunity;

it is inclusion;

it is empowerment;

it is social justice in action.

This is why institutions like IGNOU occupy such an important place in India's educational landscape.

My Personal Experience at NIOS

Friends, I had the privilege of serving NIOS for a short duration as the Chairperson. That experience strengthened my faith in the transformative power of Open and Distance Learning. At NIOS, I met learners from every corner of the country, *viz:*

- students who had discontinued formal education due to family responsibilities.
- young sportspersons balancing academics with training.
- working youth trying to complete their education.
- women returning to learning after several years.
- learners from remote and underserved regions.
- children whose life circumstances did not fit within the structure of conventional schooling.

For many of them, Open Schooling was not a second choice. It was their only chance, and when that opportunity reached them, their lives changed. It was then that I felt, "For many learners, ODL is not the second chance in education; it is often the first real chance." This is precisely its greatest strength.

NEP—2020 and the Vision of Inclusive Education

Under the visionary leadership of Hon'ble Prime Minister Shri Narendra Modi Ji, India has embarked upon one of the most ambitious educational transformations in contemporary India through the National Education Policy–2020. NEP–2020 is not just a policy document- this is the blueprint of India's future. Its central philosophy is simple but powerful — every learner matters, and every learner must have access to quality education. If we read NEP–2020 carefully, we can clearly see the ethos of Open and Distance Learning woven into its vision.

- Multiple entry and exit.
- Academic flexibility.
- Lifelong learning.
- Technology-enabled education.
- Anytime-anywhere learning.

All these elements have always been the fundamental principles of Open and Distance Learning. In this sense, it can be said that 'NEP— 2020 has mainstreamed many ideas that the ODL movement pioneered decades ago'.

As you all know, the Gross Enrolment Ratio (GER) stands at 90.9% at the primary level, 90.3% at the upper primary level, 78.7% at the secondary level, 58.4% at the higher secondary level, and just 28.4% in higher education. Under NEP 2020, India has set an ambitious target of raising the GER in higher education to 50% by 2035. These figures clearly indicate that learner participation declines sharply as students progress through the educational ladder. It is precisely at this juncture that flexible learning pathways, Open Schooling, and Open and Distance Learning (ODL) emerge as powerful instruments of inclusion, expanding access and creating opportunities for those who might otherwise be left behind. That is why teacher education matters. Friends, whenever we discuss educational transformation, one important question arises:

Dear Friends, who prepares the people? And who prepares the nation? The answer is simple

–Teacher Educators. Teacher educators shape teachers. Teachers shape students. Therefore, teacher education occupies a unique place in the education ecosystem. As rightly stated in NEP—2020, "No education system can rise above the quality of its teachers." If India has to become a knowledge society and a *Viksit Bharat* by 2047, we need excellent teachers. If we need excellent teachers, we need excellent teacher educators.

Isliye shikshak shiksha keval ek shaikshik karyakram nahin hai. Yeh rashtra nirmaan ka aadhar hai. Yadi hamein viksit Bharat banana hai, to hamein utkrsht shikshak chahiye. Aur yadi hamein utkrsht shikshak chahiye, to hamein utkrsht shikshak shikshakon ki aavashyakta hogi. (Therefore, teacher education is not merely an academic programme; it is the very foundation of nation-building. If we aspire to build a Viksit Bharat, we must prepare outstanding teachers. And if we are to prepare outstanding teachers, we need outstanding teacher educators.)

The Changing Role of Teacher Educators

The contemporary world is transforming at an unprecedented pace. Technology is transforming workplaces. Knowledge is expanding at an unprecedented pace.

New professions are emerging while existing professions are being redefined. Schools are no longer expected only to impart information; they are expected to nurture creativity, critical thinking, collaboration and values. The student of today is not the same as the student we knew twenty years ago. He learns differently, he communicates differently, he accesses information differently.

Aur isliye, bhavi shikshak ko bhavishya ki avashyaktaon ke anuroop taiyar karna hoga, na ki ateet ki paddhatiyon se. (Therefore, the teachers of tomorrow must be equipped for the demands of tomorrow—not trained by the methods of yesterday). As we often say, "The teacher of tomorrow cannot be prepared using the pedagogies of yesterday." In today's context, in alignment with NEP—2020, the National Council for Teacher Education (NCTE) has taken this responsibility forward and has already introduced three new programmes in teacher education. In pre-service teacher education, we have initiated the Integrated Teacher Education Programme (ITEP), which focuses on the integration of pedagogy and content—what Professor Mohan Menon (the key speaker of today) described as a dual-major degree. Alongside this, for in-service teachers, the National Mission for Mentoring (NMM) was launched for the first time in India on a digital platform. Currently, we have over 6,000 mentors under NCTE, and through more than 12,000 online digital platform sessions a year, we are providing hand-holding support to teachers who want to learn something new, whether they are highly experienced or in their beginning phase. Similarly, I am happy to share—and many of you might already know—about National Professional Standards for Teachers (NPST). We all have our own professional standards that we have acquired or defined for ourselves over time. However, defining formal National Professional Standards and linking them with teachers' career growth was a new mission handed down by the NEP--2020, and NCTE is actively working on this. Last year, combining Kendriya Vidyalayas, Navodaya Vidyalayas, and CBSE schools, we conducted this orientation with roughly 18,000 teachers, which will gain further momentum this year. There are more than 1 crore (10 million) school teachers in India in total. The policy has set a timeline up to 2030 to reach all of these 1 crore teachers.

Technology Integration is No Longer Optional

Friends, the past few years have imparted a valuable lesson to us. *(Pichhle kuch varshon ne hamein ek mahatvapurn shiksha di hai)*. Technology in education is no longer optional; it is now inevitable. The question today is not whether technology should be used. The real question is, how can technology be used meaningfully, ethically and effectively? Technology can improve access; it can improve engagement; it can support personalised learning; it can promote equity and expand opportunities for all learners; it can make learning more flexible, inclusive, and learner-centered.

But we must also remember one fundamental truth: *technology is a powerful servant but a poor master*. It should empower teachers, not replace them. Technology must remain a tool in the hands of teachers—it can never become a substitute for the teacher. As NEP—2020 rightly emphasises, technology should support pedagogy, not drive pedagogy. *Hamara lakshya* "Digital First" *nahi, balki* "Learner First" *hona chahiye*. Technology should strengthen human connections in education, not weaken them.

AI and the Future of Education

We are witnessing one of the most significant technological disruptions in human history. Artificial Intelligence is changing the way we learn, work and communicate.AI can assist teachers in lesson planning. It can generate learning resources. It can support assessments and feedback. It can identify learning gaps. It can help provide personalised learning pathways. For Open and Distance Learning institutions, AI opens extraordinary possibilities. AI-enabled learning analytics can identify learners who need support. Adaptive learning systems can personalise content according to learner needs. Multilingual tools can help break language barriers. Virtual academic assistants can support learners anytime and anywhere. For institutions like IGNOU, these technologies can significantly enhance learner support systems and learner success rates.

But Friends, 'AI has already entered into education'. The real challenge is preparing educators who can use AI wisely, ethically and responsibly. As I often say, "Artificial Intelligence must augment Human Intelligence, not replace Human Intelligence".

Virtual Schools and the Future of Learning

The National Education Policy—2020 envisions an education system that is flexible, inclusive and learner-centric. In this context, the concept of Virtual Schools assumes great significance. *Yadi Open Schooling ne shiksha ko bhaugolik seemaon se mukt kiya, to Virtual Schooling ne shikshak ko samay aur sthan donon ki seemaon se mukt kar diya hai.* (If Open Schooling removed the barriers of geography, Virtual Schooling has transcended the barriers of both time and space, enabling teachers and learners to connect anytime, anywhere). Virtual Schools make quality education accessible to:

- learners in remote areas,
- sportspersons and artists,
- children with special needs,
- working learners, and those requiring flexible learning pathways.

This reflects the core spirit of NEP–2020—"One size does not fit all. Education systems must adapt to learners, not the other way around." However, we must remember, virtual schools may have virtual classrooms, but they can never have virtual teachers. Technology can deliver content. Teachers create connection, inspiration and values.

Ab seekhna kisi campus, kisi city ya kisi timetable tak seemit nahin raha. Today, learning is no longer limited by the boundaries of a campus, a city, or a fixed timetable. Perhaps this lifelong learning culture is one of the greatest contributions of digital technologies.

Aur yahi to Open and Distance Learning ki mool bhavana bhi hai. (That, indeed, is the very essence of Open and Distance Learning). **"**Learning never stops, and education never expires!"

Equity and the Digital Divide

However, while celebrating technology, we must also remember the digital divide. Technology democratizes education only when access is equitable. We must remain sensitive to:

- Rural and urban disparities,
- Access to devices and connectivity,
- Digital literacy levels, and
- Accessibility for learners with disabilities.

In a country as vast and diverse as India, this question is of paramount importance. Technology should become a bridge and not a barrier.

The Continuing Relevance of IGNOU

The journey of IGNOU itself is a testimony to the transformative power of Open and Distance Learning. For decades, IGNOU has expanded educational opportunities for millions of learners. It has reached communities that conventional systems often find difficult to reach. It has shown that scale and quality can coexist. IGNOU has demonstrated that education can be flexible without compromising excellence. And this lay at the heart of Prof. G. Ram Reddy's vision. Today, IGNOU is carrying that very vision forward. Perhaps the greatest tribute to Prof. G. Ram Reddy is that IGNOU continues to carry forward his vision with commitment and conviction.

Conclusion

As India moves towards the vision of *Viksit Bharat* 2047, the role of teachers and teacher educators will become even more important. Technology must not merely be adopted. It must be thoughtfully integrated. Artificial Intelligence must not replace human intelligence. It must augment human potential. Open and Distance Learning must

not remain on the margins of educational discourse. It must become one of the central pillars of India's learning ecosystem.

Today, the need is not merely for technology adoption. The need is for technology with humanity, innovation with inclusion, and excellence with equity. As we move forward, let us carry with us the enduring vision and message of Prof. G. Ram Reddy. **"***Education should be designed around the learner, not the learner around education."*

This is not merely an idea; it is a national imperative for a country as vast and diverse as India. With these words, I would like to conclude by quoting the Hon'ble Prime Minister, Shri Narendra Modi: "Education is the most powerful medium for empowerment and nation building."

Aur iss nation building ki yatra mein shikshak, shikshak shikshan sansthan aur Open and Distance Learning sansthayein hamari sabse badi shakti hain. (In this journey towards nation-building, our greatest strength lies in our teachers, our teacher education institutions, and our Open and Distance Learning institutions).

With these words, I once again congratulate IGNOU for organising the 31st Prof. G. Ram Reddy Memorial Lecture and extend my best wishes for the success of today's deliberations.

Dhanyavaad.

Jai Hind! Jai Bharat!

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CAMPUS NEWS

National Seminar on Transformative Role of Skill Education

The one-day National Seminar on 'Transformative Role of Skill Education in Youth Empowerment and *Atmanirbhar Bharat*' was organised by the Maulana Azad National Urdu University (MANUU) Campus, Bhopal, Madhya Pradesh, recently. It was organised to deliberate on the crucial role of skill education in enhancing youth employability and entrepreneurship, and to examine the role of vocational and skill-based education in achieving the vision of *Atmanirbhar Bharat*. The event saw enthusiastic participation from academicians, researchers, policymakers, professionals, and students from universities/ institutions across India. Dr Indrajeet Dutta, Co-convenor of the event, delivered the Welcome Address and introduced the dignitaries. Prof. Noushad Husain highlighted the seminar's academic relevance and objectives, emphasising the need to integrate skills education with mainstream higher education to enhance employability and entrepreneurship. The inaugural session was graced by distinguished dignitaries including Prof. Madhushree Sekher, Dean, School of Skill Education, Tata Institute of Social Sciences (Online), Prof. Ratnamala Arya, Dean (Extension Education), Regional Institute of Education NCERT, Dr. Ayesha Ali, Registrar, M.P. State Council of Homeopathy, Madhya Pradesh, and Prof. M Vanaja, Dean, School of Education and Training, MANUU Hyderabad.

The Presidential Addresses were delivered by Mr Shameemuddin (IAS), Former Senior Director, Global Skill Park, Bhopal, and Prof. Milind D Dandekar, Vice Chancellor, Madhya Pradesh Bhoj Open University, Bhopal, Madhya Pradesh. The speakers emphasised industry-academia collaboration, sustainable development, and skill-driven empowerment as the foundation of *Atmanirbhar Bharat*. The session concluded with a Vote of Thanks proposed by Dr. Jaki Mumtaj, Convenor of the event.

The Plenary Session featured eminent keynote speakers, including Prof. Rajesh P Khambayat, National Institute of Technical Teachers' Training and Research, Bhopal, Dr. Hina Arshad, Rabindra Nath Tagore University, and Ms Kuhoo Sharma, Chartered Accountant and Forensic Auditor. The speakers highlighted the importance of industry-aligned curriculum, digital skills, financial literacy, innovation, and entrepreneurial competencies in strengthening the nation's skill ecosystem.

The technical sessions were conducted in both offline and online modes. The offline session, chaired by Dr. Abdul Raheem, featured 21 research paper presentations. In addition, nine parallel online technical sessions were organised. A total of 143 research papers were presented (21 offline and 122 online) under nine thematic areas, including Skill Education and Policy Framework, Employability and Entrepreneurship, Digital Skills and Emerging Technologies, Teacher Education and Skill Pedagogy, Inclusive Skill Development, Industry-Academia Collaboration, Local Skills and Sustainable Livelihoods, Women Empowerment through Skill Education, and Skill Development in light of NEP implementation. The discussions and deliberations were intellectually enriching and reflected the growing academic engagement with skill education as a transformative force in nation-building. The seminar concluded successfully with a reaffirmation of the commitment to promote interdisciplinary dialogue, bridge theory and practice, and fortify the vision of *Atmanirbhar Bharat* through skill-based empowerment.

National Seminar on GST 2.0 Reforms in India

A two-day National Seminar on 'GST 2.0 Reforms in India : Sectoral Impact, Changes, and Roadmap to *Viksit Bharat*' is being jointly organised by the Department of Economics, School of Management, Pondicherry University, Puducherry, Centre for the Study of Law and Governance, Jawaharlal Nehru University, New Delhi, Institute of Development Studies, Jaipur, and School of Arts, Humanities and Social Sciences, Chanakya University, Bengaluru from August 27-28, 2026 at Pondicherry University, Puducherry. The event is sponsored by the Indian Council of Social Science Research (ICSSR), Ministry of Education, Government of India, New Delhi. The Subthemes of the event are:

- ***Agriculture and Allied Sectors***: Impact of GST

on farm mechanisation, fertiliser inputs, bio-pesticides, micronutrients, food processing and perishables, dairy sector, aquaculture, renewable energy in agriculture, forest produce, and logistics and transportation. Topics may focus on input tax credit, pricing, supply chains, and farmers' income.

- ***Food and Household Sector***: GST implications for consumer durables, food items, household goods, and construction materials. Emphasis may be placed on tax slabs, affordability, demand patterns, and inflationary effects.
- ***Automobile Sector***: Assessment of GST on two-wheelers, three-wheelers, passenger vehicles, commercial vehicles, trucks, and buses. Issues such as cess structure, electric vehicles, manufacturing competitiveness, and consumer demand may be explored.
- ***Service Sector***: Examination of GST's impact on hotel accommodation, gyms, salons, wellness centres, and other personal services. Topics may include tax compliance, pricing strategies, and service sector growth.
- ***Toys, Sports, and Handicrafts***: Analysis of GST rates and their impact on traditional industries, MSMEs, artisans, exports, and domestic market competitiveness.
- ***GST and Educational Services***: Evaluation of GST provisions relating to educational institutions, private coaching centres, ed-tech platforms, and ancillary services, along with affordability and accessibility concerns.
- ***Healthcare Sector***: Impact of GST on medicines, including Ayurveda, Unani, and Homoeopathy, medical equipment, health insurance, and healthcare services. Issues of tax exemptions and public welfare implications may be addressed.
- ***GST Reforms and Industrial Development***: Broader analysis of GST reforms and their impact on industry, MSMEs, trade, real estate, e-commerce, and the rural and informal economy. Topics may include compliance burden, digitalisation, formalisation of the economy, and revenue mobilisation.

For further details, contact the Convener, Prof. V Sivasankar, Department of Economics, Pondicherry University, Puducherry-605 014 through E-mail: *seminarecopu@gmail.com.* For updates, log on to: *http://www.pondiuni.edu.in/events/*

National Conference on Emerging Trends

A two-day National Conference on 'Emerging Trends in Sustainable Development, Energy, Materials and Allied Domains' is being organised by the Gauhati University Institute of Science and Technology, Gauhati University, Guwahati, Assam from October 09-10, 2026. The event is an interdisciplinary platform for researchers, academicians, industry experts, and students to discuss recent advances in sustainable development, energy, materials, AI, healthcare, and allied science and technology domains. The conference aims to promote knowledge exchange, research collaboration, and innovative solutions for sustainable societal progress. The Thrust Areas of the Event are:

- Sustainable Development and Green Technologies.
- Renewable Energy and Storage Systems.
- Advanced Materials and Nanotechnology.
- Environmental Science and Waste Management.
- Theoretical and Computational Chemistry.
- Green Synthetic Organic Methods.
- Computational Modeling, AI and Simulation.
- Drug Design and Pharmaceutical Sciences.
- AI in Healthcare and Biomedical Applications.
- Electronics, Sensors and Smart Devices.
- Chemical Sciences and Catalysis.
- Biotechnology and Healthcare Materials.
- Climate Change and Resource Management.
- Interdisciplinary Science and Technology.

For further details, contact Convenor, Prof. Pranjal Kumar Baruah, Department of Applied Sciences, Gauhati University, Guwahati -14, Assam through Mobile No: 08638437358 / 08638712576 and E-mails: *abstractetsdem@gmail.com.* For updates, log on to: *www.events.gauhati.ac.in*

National Workshop on Application of Python

A thirteen-day National Workshop on 'Application of Python in Research and Development' is being organised by the A. K. Dasgupta Centre for Planning and Development, Visva-Bharati, Santiniketan, West Bengal from

August 31-September 12, 2026 through hybrid mode. The primary goal of the event is to showcase the elegance of the Python programming language and encourage participants to sharpen their coding abilities for research work.

Python is a top professional skill known for its simplicity and developer friendliness. Python is a versatile high-level scripting language suited for everything from text processing and system admin to research work. What sets it apart from other similar languages is its compact, beginner-friendly core that's quick to learn, yet it supports endless functionality through add-on modules. It's a fully object-oriented language and runs on almost every major platform available.

Course Overview

- Python Basics.
- Functions and Modules.
- Python Strings.
- Iterables: Sequences, Dictionaries, and Sets.
- Flow Control.
- Regular Expressions.
- Use of Statistical Tools in Python.
- How to Write Code in Python.
- Correlation and Regression: Bivariate Plots, Introduction to Regression, Multiple Linear Regression Using Python.
- Principal Component Analysis [PCA], Cluster Analysis, Factor Analysis.
- Analysis of Variance, Repeated Measurement Model.
- Discriminant Analysis, Logistic Regression.
- Comparing Categorical Variables, Association, Chi-Square Tests, Goodness of Fit Tests.
- Testing of Statistical Hypotheses [Parametric and Non-Parametric tests].

For further details, contact Prof. Bidhan Chandra Roy, Chair Professor, A.K. Dasgupta Centre for Planning and Development, Visva-Bharati, Santiniketan, West Bengal-731235 through E-mail: *reachpa2cp.akdc@visva-bharati.ac.in.* For updates, log on to: *www.visvabharati.ac.in/home/akdasguptacentre/* ❑

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THESES OF THE MONTH

SCIENCE & TECHNOLOGY
A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of May-June, 2026)

AGRICULTURAL & VETERINARY SCIENCES

Agricultural Engineering

1. Kranthi, G S Pratyusha. **Drought risk assessment in rainfed areas of Andhra Pradesh using spatial and temporal analysis**. (Dr. K Venkateswara Rao and Dr. K Padma Kumari), Department of Spatial Information Technology, Jawaharlal Nehru Technological University, Kakinada.

Biotechnology

1. Khiangte, Laltlankimi. **Evaluation and characterization of bioactive compounds of *Neoalsomitra Clavigera* (Wall) hutch**. (Dr. H Lalhruaitluanga), Department of Biotechnology, Mizoram University, Aizawl.

BIOLOGICAL SCIENCES

Botany

1. Chouhan, Chhatar Singh. **Studies on growth and sustainable yield of chilli and tomato using combined doses of chemical and bio fertilizer in Manawar Tehsil of Dhar District of Madhya Pradesh**. (Dr. Pinki Dwivedi), Department of Botany, Samrat Vikramaditya Vishwavidyalaya, Ujjain.

2. Maitreya, Aanal Bharatbhai. **Assessment of tree cover, vegetation composition and mapping, carbon sequestration potential (Nondestructive method) in Gandhinagar Mahanagarpalika of Gujarat State**. (Dr. Naineshi Modi), Department of Botany, Gujarat University, Ahmedabad.

3. Pal, Kalpana Dayaram. **Anti-neoplastic property of *Taverniera cuneifolia* (Roth) Ali extract in lung cancer**. (Dr. P S Nagar), Department of Botany, Maharaja Sayajirao University of Baroda,Vadodara.

4. Thacker, Khyatiben Dineshbhai. **STEM anatomy of some species of morning glories (Ipomoea L) of convolvulaceae**. (Prof. K S Rajput), Department of Botany, Maharaja Sayajirao University of Baroda,Vadodara.

Food Science & Nutrition

1. Mamgain, Anupriya. **Nutrient profiling of Bark of Banyan tree (Ficus benghalensis L): Impact of supplementation in type 2 diabetic subjects**. (Dr. Swati A Dhruv), Department of Foods and Nutrition, Maharaja Sayajirao University of Baroda,Vadodara.

Microbiology

1. Ambechada, Jaynesh Kantibhai. **Microbial conversion of groundnut oil cake into value added products**. (Dr. Valentina Umrania), Department of Biosciences, Saurashtra University, Rajkot.

Molecular Biology

1. Vaishnav, Juhi. **Disruption of thyroid hormone signaling alters morphogenesis of lateral plate mesoderm derived structures in the chick embryo (Gallus domesticus)**. (Prof. B Suresh), Faculty of Science, Maharaja Sayajirao University of Baroda,Vadodara.

Zoology

1. Jangir, Suman. **Evaluation of potential anticancer compounds extracted from ant species and their effect onsignaling pathways using in-vitro cell lines**. (Dr. Varalakshmi K N), Department of Zoology, Jain (Deemed-to-be University), Bangalore.

EARTH SYSTEM SCIENCES

Environmental Science

1. Nath, Snigdha. **Prospect of vermicomposting on transforming oil refinery sludge into valuable organic manure**. (Dr. Subhasish Das), Department of Environmental Science, Mizoram University, Aizawl.

2. Shah, Vaidehi Himanshu. **Evaluation and assessment of habitat connectivity for sloth bears in Central Gujarat**. (Prof. Geeta Padate), Department of Environmental Studies, Maharaja Sayajirao University of Baroda,Vadodara.

ENGINEERING SCIENCES

Biomedical Engineering

1. Pavithra, Prakrithi. **Discovering novel cell-type specific non-coding RNA and dissecting their role in cancer**. (Prof.Ishan Gupta), University of Queensland – IIT Delhi Academy of Research, Indian Institute of Technology Delhi, New Delhi.

Chemical Engineering

1. Patil, Sanjeet Sanjay. **Development of computer vision and generative artificial intelligence based frameworks for healthcare domain**. (Prof. Manoj Kumar Ramteke and Prof. Anurag S Rathore), Department of Chemical Engineering, Indian Institute of Technology Delhi, New Delhi.

2. Tamboli, Chirag Arvindkumar. **Reclamation of heavy metals from e-waste and their applications in chemical processing**. (Dr. Bina Sengupta), Department of Chemical Engineering, Maharaja Sayajirao University of Baroda,Vadodara.

Civil Engineering

1. Bhagyamma, Guvvala. **Effect of nano-materials on the mechanical properties of barites concrete and strength prediction through machine learning**. (Dr. P Sri Chandana and Dr. H Sudarsana Rao), Department of Civil Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

2. Choudhury, Gyanaranjan Samal. **Development of decision-making framework for sustainable management of construction and demolition waste**. (Dr. Dipti Ranjan Biswal), KIIT School of Civil Engineering, Kalinga Institute of Industrial Technology, Bhubaneswar.

3. Reddy, Rama Bhupal D. **Solid waste disposal practices in Anantapur Town and its impact on natural resources**. (Dr. R Bhavani), Department of Civil Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

4. Shah, Inayatali Liyakatali. **Experimental analysis and performance evaluation of furrow irrigation system using conventional approach and automated sensor based approach**. (Dr. T M V Suryanarayana), Department of Civil Engineering, Maharaja Sayajirao University of Baroda,Vadodara.

5. Waliitagi, Asha. **Performance evaluation of steatite powder and micronized biomass silica based concrete**. (Dr. Dasarathy A K), Department of Civil Engineering, Jain (Deemed-to-be University), Bangalore.

Computer Science & Engineering

1. Chouhan, Nitesh. **Hybrid optimization based clustering and multipath routing algorithm for IoT assist WSN**. (Dr. Rajkumar Jain and Dr. Naresh Kumar), Department of Computer Science & Engineering, Sangam University, Bhilwara.

2. Durga Devi, P. **Enhanced early prediction framework for stroke using deep learning algorithms**. (Dr. Akila K), Department of Computer Science & Engineering, SRM Institute of Science and Technology, Kattankulathur, Chennai.

3. Joshi, Vinod Kumar. **Development of multi confirmation hybrid algorithm for the protection of traders in intraday trading**. (Prof. Raj Kumar Somani), Department of Computer Science & Engineering, Sangam University, Bhilwara.

4. Kamakshamma, V. **Advanced deep learning methods for predicting college student issues**. (Dr. K F Bharathi), Department of Computer Science & Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

5. Kulkarni, Srinidhi. **Design & enhance prediction model for protein-ligand binding affinity using neural networks**. (Dr. Ganesh D and Dr. Ramesh K V), Department of Computer Science & Engineering, Jain (Deemed-to-be University), Bangalore.

6. Parmar, Mahesh. **A deep learning based multi-tasking classification model for sentiment analysis**. (Dr. Akhilesh Tiwari), Department of Computer Science & Engineering, Madhav Institute of Technology & Science, Gwalior.

7. Patnaik, Rakesh. **Deep transfer learning based analysis of biomedical images for efficient prediction**. (Dr. Premansu Sekhara Rath and Dr. Sasmita Padhy), Department of Computer Science & Engineering, GIET University, Gunupur.

8. Shaik, Wasim Akram. **Multi model approaches for early detection of Parkinson's disease**. (Dr. A P Siva Kumar), Department of Computer Science & Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

9. Sobha Rani, K. **Expert finding system using text mining in academic social networks**. (Dr. KVSVN Raju and Dr. V Valli Kumari), Department of Computer Science & Engineering, Jawaharlal Nehru Technological University, Kakinada.

Electrical & Electronics Engineering

1. Anniah, Pratima. **Prediction, analysis and classification of cardiac arrhythmia, using deep learning approaches**. (Dr. Gopala Krishna K and Dr. S N Prasad), Department of Electronics Engineering, Jain (Deemed-to-be University), Bangalore.

2. Chiranth, R. **K-means and geometric search models based energy efficient path planning and location identification with AUV data collection in underwater wireless sensor networks**. (Dr. Gopala Krishna K), Department of Electronics Engineering, Jain (Deemed-to-be University), Bangalore.

3. Lalngaihawma, Samuel. **Study on automatic generation control of renewable energy sources based multi area, multi source system under deregulated environment**. (Dr. Subir Datta), Department of Electrical Engineering, Mizoram University, Aizawl.

4. Meenakshi, M. **Segment reduction-space vector pulse width modulated multilevel F-type inverter based active harmonic filter**. (Dr. N Chellammal), Department of Electrical & Electronics Engineering, SRM Institute of Science and Technology, Kattankulathur, Chennai.

5. Nambiar, Rajashree. **Deepdentalnet: Alveolar bone dimension measurements for optimized dental implant planning using deep learning techniques**. (Dr. Raghu N), Department of Electronics Engineering, Jain (Deemed-to-be University), Bangalore.

6. Ravindra, K S. **A secured open standard framework for Internet of Things applications**. (Dr. Panduranga Rao M V), Department of Electronics Engineering, Jain (Deemed-to-be University), Bangalore.

7. Sarkar, Sukrashis. **Operational aspects of Modular Multilevel Converter (MMC) based topologies for MVDC/HVDC**. (Prof. Anandarup Das), Department of Electrical & Engineering, Indian Institute of Technology Delhi, New Delhi.

8. Shinkhede, Sheetal Sachin. **Load automation and rescheduling of electrical energy consumption to relieve power system stress**. (Dr. Dharmistha Vishwakarma), Department of Electrical Engineering, Maharaja Sayajirao University of Baroda,Vadodara.

Electronics & Communication Engineering

1. Chaduvula, Gowri. **Design and performance analysis of patch antennas with EBG structures for IoT applications**. (Dr. B Leela Kumari), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University, Kakinada.

2. Mohsin Khan, A. **Neural network based automated diagnosis of thyroid nodule using image processing**. (Dr. V K Sharma), Department of Electronics & Communication Engineering, Bhagwant University, Ajmer.

3. Sudha Rani, U. **Computationally efficient machine learning models for chronic kidney disease diagnosis**. (Dr. C Subhas), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

Mechanical Engineering

1. Narendra Babu, Y. **Developing nano HNT dispersed composite of ABS/PC: Investigating thermal, mechanical and wear properties**. (Dr. M. Venkateswara Rao and Dr. A. Gopalakrishna), Department of Mechanical Engineering, Jawaharlal Nehru Technological University, Kakinada.

2. Terefe, Tesfaye Olana. **Penetration mechanics of low-velocity shrapnel in soft tissues and their surrogates**. (Prof. Naresh Varma Datla and Prof. Anoop Chawla), Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi.

MATHEMATICAL SCIENCES

Mathematics

1. Ajit Singh. **A study of polynomial zero sets, their asymptotic characteristics and higher dimensional differential equation**. (Dr. Manoj Kumar), Department of Mathematics, Bhagwant University, Ajmer.

2. Chaudhary, Kuldipkumar Kanubhai. **Some analogues of generalized wright type hypergeometric function**. (Dr. Snehal Babubhai Rao), Department of Applied Mathematics, Maharaja Sayajirao University of Baroda, Vadodara.

3. Joshi, Shitalben Hiteshkumar. **On variations of sensitive dynamical systems**. (Prof. Ekta Shah), Department of Mathematics, Maharaja Sayajirao University of Baroda,Vadodara.

4. Karanamu, Seetharam. **Thermal radiation effects on convective heat and mass transfer in MHD nanofluid flows**. (Dr. K Jayarami Reddy and Dr. S Kalesha Vali), Department of Mathematics, Jawaharlal Nehru Technological University, Kakinada.

5. Racshitha, N. **Mathematical and computational approaches to solving stochastic delay differential equation in finance**. (Dr. Manimaran R), Department of Mathematics, SRM Institute of Science and Technology, Kattankulathur, Chennai.

6. Seema. **A qualitative study of sequence and real analysis with various real applications**. (Dr. Manoj Kumar), Department of Mathematics, Bhagwant University, Ajmer.

7. Sharma, Ramakant. **An interactive approach for fuzzy multi-objective transportation problems using ordinary fuzzy numbers**. (Dr. Sohan Lal Tyagi), Department of Mathematics, SRM Institute of Science and Technology, Kattankulathur, Chennai.

8. Usha, B. **A numerical approach to study heat transfer analysis through fine of different structure and in microchannels**. (Dr. B J Gireesha), Department of Mathematics, Kuvempu University, Shankaraghatta.

MEDICAL SCIENCES

Biotechnology

1. Mishra, Barnalee. **Deciphering the anticancer potential of phytochemicals in breast cancer: Comprehensive studies on nano-curcumin and andrographolide**. (Dr. Gopal C Kundu), KIIT School of Biotechnology, Kalinga Institute of Industrial Technology, Bhubaneswar.

Dentistry

1. Murali, H. **In-vitro & in-vivo assessment of MTA & nano silver composite in endodontic applications**. (Dr.K Rajkumar and Dr.A Anantharaj), Department of Conservative Dentistry and Endodontics, SRM Institute of Science and Technology, Kattankulathur, Chennai.

Homeopathy

1. Garasia, Monika Surashbhai. **Efficacy of rubric of Murphy and synthesis repertory 9.1 in the case of urticaria**. (Dr. Ravinder Kochhar), Faculty of Homeopathy, Tantia University, Sri Ganganagar.

2. Mahajan, Pratiksha Dinkar. **Exploring the role of homeopathic constitutional medicines in the management of SAM and MAM children along with diet**. (Dr. Ravinder Kochhar), Faculty of Homeopathy, Tantia University, Sri Ganganagar.

3. Sundram, Shikha. **Efficacy of homeopathy in the management of primary hypertension by using medicine Boerhaavia Diffusa: A randomized single blind placebo controlled trial**. (Dr. Anjali Thakur), Faculty of Homeopathy, Tantia University, Sri Ganganagar.

4. Tomar, Jitendra Singh. **Homeopathic management in hypertension during pregnancy**. (Dr. Muktesh Arora), Faculty of Homeopathy, Tantia University, Sri Ganganagar.

Pharmaceutical Science

1. Ahmed, Jeelani. **Pharmacological screening of selected medicinal plants used in Indian folk medicine for their various biological properties**. (Dr. Kamal Kumar Goyal), Department of Pharmacy, Bhagwant University, Ajmer.

2. Aniket Singh. **Development and evaluation of sustained release matrix tablet of repaglinide using processed Aloe Vera Mucilage as release modifier**. (Dr. Kamla Kumar Goyal), Department of Pharmacy, Bhagwant University, Ajmer.

3. Dagdu, Kedar Vikas. **Solubility enhancement and dissolution method development of some poorly water soluble drugs**. (Dr. K Saravanan and Dr. Manoj Gadhave), Department of Pharmaceutical Sciences, Bhagwant University, Ajmer.

4. Lakavath, Sunil Kumar. **Development and evaluation of quercetine hydrate and resveratrol nano emulsions**. (Dr. Hindustan Abdul Ahad), Department of Pharmaceutics, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

5. Rabiah Bashir. **Formulation designing of drug loaded nanofibers for the treatment of ocular diseases**. (Prof. Nisar Ahmed Khan), Department of Pharmaceutical Sciences, University of Kashmir, Srinagar.

6. Shazia Javeed. **Bioactive guided isolation of potential hypoglycemic constituent(s) from some valuable medicinal plants of Himalayan Region**. (Dr. Mohammad Younis Dar), Department of Pharmaceutical Sciences, University of Kashmir, Srinagar.

PHYSICAL SCIENCES

Chemistry

1. Chauhan, Aishwarya. **Studies on coordination chemistry of Mg(II) and Ca(II) with sulfonate and phosphite ligands**. (Prof. Ravi Shankar), Department of Chemistry, Indian Institute of Technology Delhi, New Delhi.

2. Davas, Daksh Singh. **Switchable Divergent benzannulations of vinly sulfoxonium ylides with eletron deficient alkynes**. (Prof. Janakiram Vaitla), Department of Chemistry, Indian Institute of Technology Delhi, New Delhi.

3. Kachhi, Purvaben Akshaykumar. **Synthesis and characterization of acylpyrazolone based novel sorbents and liquid extraction of heavy metal ions**. (Prof. R N Jadeja), Department of Chemistry, Maharaja Sayajirao University of Baroda,Vadodara.

4. Marak, Brilliant N. **Design, synthesis and study of bioactive natural product congeners**. (Dr. Ved Prakash Singh), Department of Chemistry, Mizoram University, Aizawl.

5. Prajapati, Dixitabahen Parabhubhai. **Studies on mixed matrix membranes with nanodimensional additives**. (Prof. C N Murthy), Department of Applied Chemistry, Maharaja Sayajirao University of Baroda,Vadodara.

Physics

1. Kanmani, M. **Design and development of mixed metal oxide and chalcogenide-based materials for supercapacitors**. (Dr. Sakar Mohan), Department of Physics, Jain (Deemed-to-be University), Bangalore.

2. Mohammed Asif, R. **TCAD modelling of nanostructure based CdS/CdTe Nanowall solar cells**. (Dr. Dinesh Kumar Sharma), Department of Physics, Jain (Deemed-to-be University), Bangalore.

3. Rekharani, D. **Structural studies of biologically important aromatic and heteroaromatic compounds**. (Dr. Naveen S), Department of Physics, Jain (Deemed-to-be University), Bangalore.

4. Siva Jyothi, S. **A study of natural geological samples and uptake characterization in biological samples using pixe technique**. (Prof. P Venkateswarulu), Department of Physics, Jawaharlal Nehru Technological University, Kakinada. ❑

To Our Readers

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

Dr Sistla Rama Devi Pani, Editor

MARY MATHA ARTS & SCIENCE COLLEGE

(Government Aided College Affiliated to Kannur University)
Kerala, Wayanad-670645
Manager: 9447092067, 9447410831

Vacancy Notification

Applications are invited for the Posts of:

- Assistant Professor of Chemistry : 1 Post
- Assistant Professor of Zoology : 1 Post
- Assistant Professor of English : 1 Post
- Assistant Professor of Physical Education : 1 Post

} open merit

Qualifications as per UGC, Kerala Govt. & Kannur University Rules & Regulations. Application form can be downloaded from the college **website: www.marymathacollege.ac.in** and can be submitted to the office of the Manager, Mary Matha Arts & Science College, Vemom P.O., Mananthavady **within 30 days** from the date of publication of this advertisement.

Applicants should enclose a DD for Rs. 2000/- with the application form.

Place: Mananthavady
Date: 07.07.2026

Sd/-
Manager

CENTRAL UNIVERSITY OF RAJASTHAN

Advt. No.CURAJ/R/F.176/Rectt./2026/5878 Date : 10.06.2026

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(to be filled under
Direct Recruitment Basis)

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www.curaj.ac.in

Registrar

Marathwada Shikshan Prasarak Mandal, Chhatrapati Sambhajinagar

WANTED

Applications are invited from the eligible candidates for the following vacancies in M.S.P.Mandal's Grant-in-aid Arts, Commerce & Science Colleges & Law College. The application duly completed in all respect should reach **within 15 days** from the date of publication of this advertisement to the **Secretary, Marathwada Shikshan Prasarak Mandal, Deogiri College Campus, Station Road, Chhatrapati Sambhajinagar-431005 (MS). (Ph.0240-2332347)**

Posts	No. of Posts	Category
Principal	02	Open to All
Principal (Law)	01	Open to All

Note :-

1) Qualifications, pay scale and conditions of service are as per rules and regulations prescribed by the UGC, Govt. of Maharashtra and University. **2)** This Advertisement is made as per No Objection Certificate from Dy. Secretary,. (Higher Education), Mantralaya Mumbai (Maharashtra Govt.) vide letter No.JDHE Chhatrapati Sambhajinagar/ NOC/2025/ 48,Dated 01/07/2026 & Dy. Registrar, Dr. Babasaheb Ambedkar Marathwada University ,Chhatrapati Sambhajingar letter Special Cell /2026/ 678-80, Dated 03/07/2026. **3)** Employed candidates shall apply through proper channel and shall submit No Objection Certificate from the employer. **4)** Candidate must get verified A.P.I. score from the University. **5)** No T.A. & D.A. will be paid for attending the interview. **6)** The vacant post is being filled subject to the decision of Hon'ble High Court petition No.12051/2015. **7)** All the Posts are transferable among M.S.P.Mandal's colleges.

President **Secretary**

Marathwada Shikshan Prasarak Mandal, Chhatrapati Sambhajinagar (MS)

KASEGAON EDUCATION SOCIETY, KASEGAON

C/O, Rajarambapu Institute of Technology, Rajaramnagar, (Sakharale)
Tal.-Walwa, Dist.- Sangli – 415 414.

(Affiliated to Shivaji University, Kolhapur)
(Permanently Granted)

WANTED

Applications are invited from eligible candidates for the following posts:

Sr. No.	Name of the Post/ Subject	Subject Wise Vacant Posts	Name of Colleges	Total Vacant Number of Posts	Total Reservation
A)	**Assistant Professor**				
1.	Hindi	01	Arts, Commerce and Science College, Ashta, Walwa, Sangli	Total 02 Posts	Open-1, OBC-1
B)	**Director of Physical Education**	01	Smt. Kusumtai Rajarambapu Patil Kanya Mahavidyalaya (Arts, Commerce and Science), Islampur, Walawa, Sangli.		

Note : For detailed information about post, qualifications and other terms and conditions, please visit University **Website: www.unishivaji.ac.in.**

Place: Rajaramnagar.
Date: 13 /07 /2026.

Secretary,
Kasegaon Education Society,
Kasegaon, Tal-Walwa, Dist- Sangli

Sarvoday Shikshan Prasarak Mandal's Yashwantbhau Patil Mahavidyalaya

Bhose (K),Tal-Pandharpur Dist-solapur
(Affliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur)

Wanted

Applications are invited for the post of Principal from the academic year 2026-27:

NON AIDED

Sr. No.	Subject/Designation	Total Vacant
1	Principal	01 open

1. The above post is open to all, however, Candidates from any category can apply for the post **2.** Educational Qualifications service conditions & Pay Scale will be applicable as per existing rules prescribed by the UGC Notification dated 18th July, 2018, Govt of Matrarashtra Resulation No Misc/2018/C R 56/18 UNI-l dated 8th March, 2019 and University Circular No. PAHSUS/Estt/7th Pay 2019/2285/dated 25th March 2019. **3.** Candidates should submit their Academic Research Score (Academic Performance Indicator) report with related documents (Only for the post of Principal) **4.** A relaxation of 5% shall be allowed at the Bachelors as well as at the Masters level for the candidates belonging to SC/ST/OBC (Non-creamy Layer) Differently-able for the purpose of eligibility and assessing good academic record for direct recruitment. **5.** Reserved candidates, who are domiciled out of Maharashtra State, will be treated as Open Category candidates. **6.** Reserved candidates should also send a copy of their application to the Deputy Registrar, Special Cell Punyashlok Ahilyadevi Holkar Solapuri University, Solapur. **7.** Applications received after the last date will not be considered. The College will not be responsible for postal delay, if any. **8.** Reservation for women and disabled persons will be as per the Govt. norms. **9.** Reserved categories candidates shall produce the Caste Validity Certificate as per the directives issued by the State Government vide Circular No.BCC2O 1 /Par. Kra.l064 /2011/16B dated 12.12.2011. **10.** Reserved category candidates (except SC/ST) shall produce Non-Creamy Layer Certificate at the time of interview. **11.** Applicants who are in service must send their application through proper channel. **12.** Applicants are required to account for breaks, if any, in their academic career. **13.** Incomplete application will be not entertained. **14.** T.A. D.A. will not be paid for attending the interview. **15.** Applications with full details, should reach to the Secretary, Sarvoday Shikshan Prasarak Mandal's Bhose (k) Tal-Pandharpur **within 30 days** from the date of publication of this advertisement. Incomplete applications will not be entertained. **16.** This is University approved advertisement.

Place: Bhose
Date -09/06/2026

Secretary
Sarvoday Shikshan Prasarak Mandal's
Bhose (K), Tal-Pandhrpur, Dist-Solapur

ADIVASI PRAGATI MANDAL SANCHALIT,
COMRADE GODAVARI SHAMRAO PARULEKAR COLLEGE OF ARTS, COMMERCE AND SCIENCE

Talasari Tal-Talasari Dist-Palghar 401606

APPLICATIONS ARE INVITED FOR THE FOLLOWING **CLOCK HOUR BASIS** POSTS FOR THE ACADEMIC YEAR 2026-27:

AIDED

Sr. No.	Cadre	Subject	Total No. of CHB Posts	Total CHB Posts	Post reserve for
1	**Assistant Professor**	Marathi	02	04	OPEN - 02
2	**Assistant Professor**	Political Science	02		OPEN - 02

The posts for the reserved category candidates will be filled in by the same category candidates (Domicile of State of Maharashtra) belonging to the particular category only.

Reservation for women will be as per University Circular No. BCC/16/74/1998 dated 10th March, 1998. 4% reservation shall be for the persons with disability as per University Circular No. Special Cell/ICC/2019-20/05 Dated 05th July 2019.

Candidates having Knowledge of Marathi will be preferred.

"Qualifications, Pay Scale and other requirements are as prescribed by the UGC vide Notification dated 18th July, 2018, Government of Maharashtra Resolution No. Misc-2018/C.R.56/18/UNI-1 Dated 8th March 2019 and University Circular No. TAAS/(CT)/ ICD/2018-19/1241 dated 26th March, 2019 and revised from time to time."

Remuneration of the above posts will be as per University Circular No. TAAS (CT)/01/2019-2020 dated 2nd April, 2019.

The Government Resolution & Circular are available on the **website: mu.ac.in.**

Application with full details should reach the **PRINCIPAL, Adivasi Pragati Mandal Sanchalit, Comrade Godavari Shamrao Parulekar College of Arts, Commerce and Science, Talasari (Patilpada), Tal-Talasari Dist-Palghar 401606 within 15 days** from the date of publication of this advertisement. This is University approved advertisement.

Sd/-
Principal
Com. GSP College of A, C & S, Talasari

Sd/-
Secretary
Adivasi Pragati Mandal, Talasari

Kisan Shikshan Prasarak Mandal, Hadolti's
Manjara Mahavidyalaya, Kanheriroad, Latur.

WANTED

Applications are invited for the post of **Principal** to be filled in **Kisan Shikshan Prasarak Mandal, Manjara Mahavidyalaya, Kanheri Road, Latur, Dist. Latur.** (permanent non grant) (Maharashtra). Eligible candidates should submit their application along-with all necessary documents **within 15 days** from the date of publication of the advertisement on the following address:

Sr. No.	Name of the Post (Designation)	No. of Post	Reservation
1	**PRINCIPAL**	**One (01) Full Time**	**Unreserved**

A) Educational Qualification :-

1. Ph.D. Degree **2.** Professor/Associate Professor with a total experience of fifteen years of teaching/research/administration in Universities, Colleges and other institutions of higher education. **3.** A minimum of 10 research publication in peer reviewed or UGC listed journals. **4.** A minimum of 110 research score as per Appendix 11, Table 2 of UGC Regulations 2018.

B) Tenure:-

A. College Principal shall be appointed for a period of five years, extendable for another term of five years on the basis of performance assessment by a committee appointed by the University, constituted as per these Rules.

Salary & Allowances:- Pay Scales as per the UGC, State Government & Swami Ramanand Teerth Marathwada University Rules from time to time.

Note:-

1. Prescribed application from is available on the University **website: (www.srtmun.in). 2.** No T.A.D.A. will be paid to attend the interview. **3.** Eligible Candidates should submit their application through proper channel. **4.** Attested Xerox Copies of S.S.C. Certificate, Degree Mark Sheet, etc. should be attached to be application.

Secretary
Kisan Shikshan Prasarak Mandal, Manjara Mahavidyalaya, Kanheri Road, Latur, Tq. Latur Dist. Latur.
Mob. No. 9699505547/ 9422071328

DNYANVARDHINI DIVYANG TRAINING COLLEGE

C/o Sanjay Centre for Special Education Goa
Bogda, Vasco - Goa. 403 804

B.Ed (ID) SPECIAL EDUCATION

ISO 9001: 2015 Certificate No: 11918102040

Phone No: 95021327520/8698787180 **Email: ddtc.co.in@gmail.com**

Ref.No: DDTC/Admn/B.Ed.(ID)/Lib. Advt./2026-27/372 **Date:** 10.07.2026

APPOINTMENTS

Applications with full Bio-Data are invited for the following post by **Direct Recruitment** basis in **DNYANVARDHINI DIVYANG TRAINING COLLEGE, BOGDA, VASCO, GOA.**

Sr. No.	Name of Post	No. of Post	Reservation
1.	College Librarian (Regular)	01	Un-reserved

Essential Qualifications

i) A Master's Degree in Library Science, Information Science or Documentation Science or an equivalent professional degree, with at least 55% marks (or an equivalent grade in a point- scale, wherever the grading system is followed).

ii) A consistently good academic record, with knowledge of computerization of a library.

iii) Cleared the National Eligibility Test (NET) conducted by UGC, CSIR or similar test accredited by the UGC like SET or have been awarded a Ph.D. Degree in accordance with the University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulations, 2009 or 2016 and their amendments from time to time as the case may be or have been awarded Ph.D. degree from National Institutes of Importance:

Provided that the, candidates registered for the Ph.D. degree prior to July 11, 2009, shall be governed by the provisions of the then existing Ordinances/Bye-laws/Statutes of the Institution awarding the degree, and such Ph.D. candidates shall be exempted from the requirement of NET/SET for recruitment and appointment of College Librarian subject to the fulfillment of the following conditions:

a) The Ph.D degree of the candidate has been awarded in the regular mode.

b) The Ph.D thesis has been evaluated by at least two external examiners;

c) Open Ph.D viva voce of the candidate has been conducted;

d) Candidate has published two research papers from his/her Ph.D work, out of which at least one is in a refereed journal;

e) Candidate presented at least two papers based on his/her Ph.D. work in conferences/seminars, sponsored/funded/ supported by the UGC/ICSSR/CSIR or any similar agency.

f) 15 years Residence Certificate.

g) Knowledge of Konkani.

Desirable: Knowledge of Marathi.

- The candidate fulfilling the above Educational Qualifications and other criteria shall submit their application form to the **Member Secretary, Sanjay Centre for Special Education Pundalik Nagar, Porvorim Goa**, **within 20 days** from the date of advertisement during office hours supported with their **(1)** Name in full (Block letters) **(2)** Permanent Address along-with Pin code, **(3)** Contact. No. **(4)** Email-ID, **(5)** Educational Qualifications **(6)** Self attested copies of **(a**) Statement of Marks of each year and Passing Certificates, **(b)** Experience Certificates **(c)** Valid Employment Exchange Registration Card **(d)** Birth certificate **(e)** Marriage Certificate if change in name **(f)** Duly affixed recent passport size photograph along-with signature across the photograph.
- Persons already in Service should send their application through Proper Channel and valid NOC from the competent Authority.
- Pay and allowances and other terms and service conditions as prescribed by Directorate of Higher Education, Government of Goa.
- No applications will be entertained if sent on School Email ID.
- The Member Secretary, Sanjay Centre for Special Education reserves the right to cancel the recruitment process without any further notice and without assigning any reasons thereof.

Sd/-
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We invite Young Physician to avail the "Sun Pharma Science Foundation Clinical Research Fellowship 2026". This Fellowship is meant to support the brilliant and upcoming early career clinicians working in India. **An Assistant Professor employed in any Medical College in India** will be eligible to be considered for this Research Fellowship. The candidate must have obtained the first academic appointment within three years prior to the date of announcement of the Fellowship. The research proposed to be carried out under this Fellowship should be an independent project of the applicant and must not be a part of a group or departmental research project. The research has to be done on a specific project under the supervision of a renowned researcher of in an institution within India (Desirable : in case of external mentor, the research should be carried out by the selected fellow in the Mentor's Institution). The aim is to enable clinicians for carrying out independent clinical research..

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Fellowship will be for a duration of six months, which may be availed by an applicant in one or more (not exceeding three) disjoint period of time within three years from the award of the Fellowship. Fellow will receive (a) a maximum of Rs. 9 lakhs as stipend for the approved research project, an amount at par with the selected Fellow's current salary, if the Fellow's employer does not provide any salary support during the period of internship for conducting research elsewhere, (b) travel, Institutional boarding & lodging, if required for carrying research in other labs, (c) a maximum amount upto Rs 12 Lakh will be paid directly as Bench Fee to the training institution, however the amount to be paid will be decided on the basis of the nature of the proposed Project, all subject to submission of Utilization Certificate.

Eligibility

- A Physician employed as Assistant Professor in any Medical College in India will be eligible to be considered for this Research Fellowship.
- The research proposed to be carried out under this Fellowship should be an independent project of the applicant, and must not be a part of a group or departmental research project.

How to apply

The applicants should submit their nominations online using the link:-

https://www.sunpharmasciencefoundation.net/

Applications will be live from **July 15 2026 to September 15, 2026. Please visit our website and apply**.

A copy of the filled application form with all supporting documents should reach in print to the office of the Foundation within 15 days of submission.

OFFICE OF SUN PHARMA SCIENCE FOUNDATION
8C, 8th Floor, Hansalaya Building, 15-Barakhamba Road, Connaught Place,
New Delhi : 110 001 (India) Tel. (91-11) 23721414/ 23721415
e-mail : sunpharma.sciencefoundation@sunpharma.com
website : www.sunpharmasciencefoundation.net

ASSOCIATION OF INDIAN UNIVERSITIES

AIU HOUSE, 16, COMRADE INDRAJIT GUPTA MARG, NEW DELHI-110 002

No.AIU/Admn/Rectt./2026/9866

Date: 09/07/2026

Vacancy Notification

The Association of Indian Universities (AIU), an apex Inter-University Organisation, invites applications from eligible candidates for engagement as ***Consultant & Young Professional/s*** on a contractual basis. Details and eligibility conditions are as under:

S. No	Name and number of position	Eligibility	Age	Remuneration
1	**Consultant** **One (01) Position**	The candidate should be retired from Government sector at the level of Joint Secretary/ Deputy Secretary/Under Secretary or equivalent level having relevant work experience preferably in the field of **Internationalization** of Higher Education/ Higher Education Administration in Govt Departments/ Autonomous bodies / Universities.	Not exceeding 65 years	Last Pay Drawn (Basic Pay + DA) minus Basic Pension plus DA thereon, subject to ceiling limits as under: **(a)** Rs.70,000/-p.m. for officers retired at Joint Secretary level or equivalent; **(b)** Rs.60,000/-p.m. for officers retired at Deputy Secretary level or equivalent; **(c)** Rs.50,000/-p.m. for officers retired at Under Secretary level or equivalent.
2	**Young Professional (Sports)-** **Two (02) Positions**	Graduate in any discipline with; PG Diploma/Certificate course (full time & minimum of 6 months duration) from reputed institute in Sports Management or related field **OR;** Two (2) years' experience in Sports Management/Tournaments/Championships/ Sports related field in SAI, Ministry of Youth Affairs & Sports/Sports University, etc. **OR** Sportsmen/women; played up to State level/ AIU All India Championships/Khelo India etc.	Not exceeding 35 years	Rs 30,000/- to 50,000/-
3	**Young Professional (Finance)** **One (01) Position**	Post Graduate in Commerce/ Finance/ Management, OR Post Graduate Diploma in a relevant field (Accounts/ Finance/ Management/ Business Administration). **Experience**: Minimum 3 years' relevant experience in accounts, TDS/ GST/ EPF compliance, payroll, reconciliation or audit support in any Government/ Semi-Government/ Autonomous Bodies/ PSUs/ Educational Institute etc. Working knowledge of Tally. **Desirable**: SAP/ ERP exposure, working experience in a 12A-registered educational society/Institute and hand-on experience in PFMS.		

4	**Young Professional (IT)** **One (01) Position**	Bachelor in Technology (Computer Science)/ B.Sc. in Computer Science/ Bachelor of Computer Applications (BCA). **Experience**: Minimum 03 years of experience in ASP.NET with C# (VS 2022) and SQL Server/PHP development (with expertise in WordPress customization and development)/ Server Management/ Financial & ERP Systems Knowledge, etc.		
5	**Young Professional (AI)** **One (01) Position**	A Postgraduate / technical / professional degree in Artificial Intelligence, Computer Science, Public Policy, Data Science / related discipline. **Desirable**: Knowledge of AI governance, machine learning, data ethics and emerging technology policy; experience in AI research, technology policy or data analysis is preferred. Experience in AI research /technology policy / data analysis /related domains. Exposure to AI governance, ethical AI frameworks, regulatory research, or public policy projects is preferred.		

General instructions:

1. The initial period of engagement shall be **six (06) months** for the **Consultant** and **one (01) year** for the **Young Professionals**. The Association reserves the right to curtail or extend the period.
2. The cut-off date for determining eligibility and age shall be the closing date for the receipt of applications.
3. Mere fulfillment of the prescribed eligibility criteria does not guarantee that a candidate will be called for a test or interview. The Association reserves the right to relax any of the stipulated conditions and to shortlist candidates as it deems appropriate.
4. No TA/DA will be provided to candidates for attending the test or interview.
5. The Association reserves the right not to fill any of the advertised post(s) without assigning any reason.
6. The Association also reserves the right to increase or decrease the number of post(s) to be filled, and may decide not to fill any post(s) at its discretion. The decision of the Association in this regard shall be final.
7. Application fee: ₹500/- through Demand draft in favour of Association of Indian Universities, payable at New Delhi. Applicant should write details of Demand Draft/Banker's Cheque in the application form.
8. Completed applications in the prescribed format, along with the application fee must be submitted in a sealed envelope super-scribed "Application for the post of _____" to the Secretary General, Association of Indian Universities, AIU House, 16, Comrade Indrajit Gupta Marg, New Delhi – 110 002, **within 30** days from the date of publication of the advertisement in Employment News.

Note: For details and application format visit the AIU **website: www.aiu.ac.in**

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