VIGNAN'S
FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH

School of Core Engineering
Department of Civil Engineering

26.05.2026

Minutes of Board of Studies Meeting

Board of Studies (BoS) meeting for the B. Tech & M. Tech programme (Sustainable Smart Construction) was conducted on 26.05.2026 in a blended mode from 10:00 A.M to 01:00 P.M. The physical meeting will be held at U-Block, First Floor, (AFF-16), while the online session can be accessed via the following link https://meet.google.com/mtk-zxxk-rmd. All members are kindly requested to make it convenient to attend the meeting.

Agenda of the BoS Meeting:

1. Program Outcomes (POs) and Program Specific Outcomes (PSOs) for the M. Tech programme in Sustainable Smart Construction.
2. Review of syllabus, Course Outcomes (COs) & CO–PO–PSO mapping.
3. Summer Internship.
4. Augmented Learning.
5. R&D events organized during Semester-II of Academic Year 2025–26 and planning for the next semester.
6. Inclusion of Artificial Intelligence (AI) in all curricula.
7. Any other points with the permission of the Chair.

The following members were present either thorough offline or online.

Sl. No	Name of the member	Position	Signature
1	Dr. M. Ramakrishna Professor Dean, School of Core Engineering	Chair-Person	
2	Dr. P. Sundara Kumar Head & Associate Professor	Internal Member	
3	Dr. T. Thyagaraj Professor, IIT Madras	External member (Academia)	
4	Mr. C. A. Prasad Director, Metey Engineering Consultancy Pvt Ltd.,	External member (Industry)	- Attended - online -
5	Dr. K. Srinivasa Rao Professor, Andhra University	Invited Member	- Attended - online -
6	Dr. A. Siva Sankar Assistant Professor	Internal Member	
7	Dr. M. V. Raju Assistant Professor	Internal Member	
8	Dr. P. Parthiban Assistant Professor	Internal Member	
9	Dr. J. Gopala Rao Assistant Professor	Internal Member (Dean R&D Nominee)	

10	Dr. A. V. A. Bharat Kumar Assistant Professor	Internal Member (School Dean Nominee)	
11	Dr. P. Rakesh Assistant Professor	Internal Member	
12	Mr. M. Anirudh Assistant Professor	Internal Member	
13	Mr. D. Ravikanth Assistant Professor	Internal Member	
14	Mr. K. Bala Gopi Krishna Assistant Professor	Member Secretary	

Chairperson Dr. M. Rama Krishna, Professor and Dean – School of Core Engineering, VFSTR initiated the meeting by welcoming and introducing the external members and invitees to the internal members. Head of the Department Dr. P. Sundara Kumar, Associate Professor, presented about the agendas of the board of studies meeting highlighting the new M.Tech programme in "Sustainable Smart Construction". The Secretary of Board of Studies, Mr. K. Bala Gopi Krishna, Assistant Professor, presented about each and every agenda.

The following points were discussed in the BoS meeting:

1. Program POs & PSOs.
2. Curriculum structure with credits, credits distribution (L-T-P-SL).
3. Course syllabus of Core and Electives.
4. Creative work-in-Liu-Course work.
5. Improvement of summer internships.
6. Having strong fundamentals to the students.
7. Organizing of national and international conference.

The following are the observations:

1. The Board of Studies members appreciated the introduction of the new M.Tech programme in Sustainable Smart Construction, as the curriculum is well aligned with current industry requirements, sustainable development goals, digital construction technologies, and emerging practices such as AI applications, BIM, green building concepts, and smart infrastructure systems.
2. The Board suggested strengthening the programme further by enhancing industry interaction through internships, live projects, case studies, software-based practical training, and multidisciplinary research components to improve students' practical exposure, innovation skills, and employability opportunities.

3. The inclusion of Teaching Assistantship in the first year of the programme, which will help students strengthen their teaching, communication, and technical support skills while enhancing academic involvement within the department.
4. The Board highly appreciated the incorporation of Work in Lieu of a Course, mandatory publication of a journal/conference paper at National or International level, and compulsory completion of MOOC/add-on courses in all four semesters, as these components promote research orientation, continuous learning, industry readiness, and exposure to advanced and emerging technologies in Smart and Sustainable Construction.
5. R25-C26 curriculum structure including list of professional core, department elective, of M. Tech in Smart and Sustainable Construction in **Appendix - I**
6. The curriculum is encompassing the courses that enable employability or entrepreneurship or skill development, provided in **Appendix - II**.
7. As it is a new program the percentage of syllabus is completely new with **100%** for M. Tech program curriculum provided in **Appendix - III**.
8. **Indian Knowledge System (IKS)** components are incorporated in the relevant courses and the details are mentioned in **Appendix - IV**.
9. The courses in the curricula are mapped with the **Sustainable Development Goals (SDG)** and the mapping details are provided in **Appendix - V**.
10. The Board suggested improving the summer internship component by strengthening collaborations with industries, construction firms, research organizations, and consultancy agencies to provide students with better practical exposure and hands-on learning opportunities in smart and sustainable construction practices.
11. The Board emphasized the importance of building strong fundamental knowledge in core civil engineering subjects along with advanced technologies, so that students can effectively understand and apply sustainable and smart construction concepts in professional practice and research.
12. The Board appreciated the proposal for organizing National and International Conferences under the programme, as it will encourage research culture, technical interaction, publication activities, and knowledge sharing among students, faculty members, industry experts, and researchers.

The following improvements are suggested: (Action Points)

- ✓ The Board of Studies members reviewed and approved the Program Outcomes (POs) and Program Specific Outcomes (PSOs) framed for the newly proposed M.Tech program in Sustainable Smart Construction. Members appreciated the relevance of the outcomes in addressing modern construction technologies and sustainability requirements.
- ✓ During the discussion on the course "Advanced Construction Materials & Methods," the members observed that the contents of Module–1 were well structured and appropriate. However, in Module–2, Unit–1 and Unit–2 titles appeared similar in nature. The coordinator, Dr. P. Parthiban, was advised to revise and modify the unit titles appropriately to avoid repetition and improve clarity.
- ✓ The BoS members emphasized that all prescribed syllabus topics should be properly supported by the recommended textbooks. Faculty members were advised to thoroughly verify the reference books and ensure complete syllabus coverage through standard textbooks.
- ✓ In the course "Sustainable Construction Practices," the members expressed satisfaction with the syllabus structure and appreciated the inclusion of important sustainability-related topics. They further suggested verifying whether the recommended textbooks adequately cover the entire syllabus content.
- ✓ Members strongly recommended organizing special lectures, guest talks, and expert sessions from both industry professionals and academicians. Particular emphasis was given to topics related to green buildings, sustainable development practices, and emerging construction technologies.
- ✓ While discussing the course "Structural Health Monitoring & Sensors," members stressed the importance of practical-oriented teaching. Faculty handling the course were advised to demonstrate instruments and monitoring devices during classroom sessions. Members also suggested including various Non-Destructive Testing (NDT) techniques using mechanical devices and chemical testing methods.
- ✓ In the course "Smart Infrastructure & IoT in Construction," the members identified repetition of certain topics in Module–1 Unit–2 with topics already covered in previous courses. Faculty members were advised to revise the syllabus and remove duplication to maintain uniqueness of course content.
- ✓ Members suggested including detailed case studies of old bridges, existing infrastructure systems, and deteriorated structures in Module–2. This would help

students understand practical challenges associated with infrastructure maintenance and rehabilitation.

- ✓ The BoS members further recommended the inclusion of chemical testing procedures and inspection methodologies relevant to construction practice. They emphasized the importance of exposing students to real-time site inspection procedures through field visits and practical demonstrations.
- ✓ Members suggested revising the Course Outcomes (COs) and aligning them properly with Bloom's Taxonomy levels to ensure measurable learning objectives and outcome-based education practices.
- ✓ In the course "BIM and Digital Construction Management," members strongly recommended providing hands-on training to students using industry-standard software tools such as REVIT or other suitable BIM platforms widely adopted in the construction industry.
- ✓ Members also suggested training students in PRIMAVERA software, particularly for applications involving project scheduling, resource allocation, cost estimation, and project monitoring. It was additionally recommended that students be encouraged to undertake internships in project consultancy organizations during their second year.
- ✓ The Board advised faculty members to review and modify the CO statements and CO–PO mapping to ensure proper alignment between course objectives and program outcomes.
- ✓ In the elective course "Construction Robotics & Automation," members suggested procuring a small robotic model or demonstration unit to facilitate practical exposure and improve student understanding of robotic applications in construction.
- ✓ During the meeting, some members expressed concern regarding the availability of expertise to handle advanced technology-oriented courses. In response, the Secretary of BoS, Mr. K. Bala Gopi Krishna, clarified that three faculty members from the Civil Engineering Department are currently undergoing training in Artificial Intelligence and Machine Learning. Members appreciated this proactive initiative by the department.
- ✓ For the course "Virtual Reality & Augmented Learning," members suggested modifying the title of Unit–1 in Module–2 to improve relevance and clarity of the syllabus structure.
- ✓ The BoS members recommended changing the course title "Prefabrication & 3D Printed Concrete" to "Precast & Prefabrication Concrete Structures" to better reflect the actual course content and industry terminology.

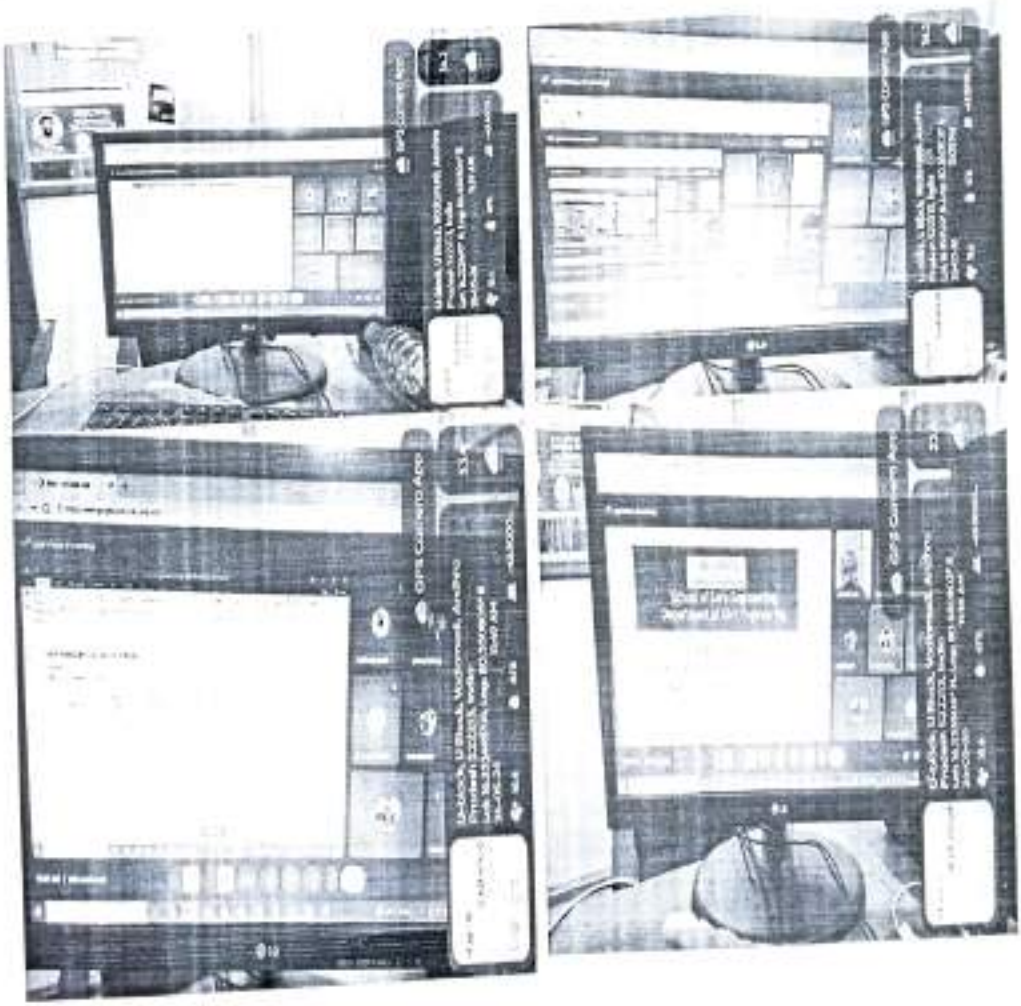
- ✓ Members suggested that topics related to water transportation systems and infrastructure may also be incorporated into the course "Smart Transportation & Mobility Infrastructure" for broader coverage of transportation engineering concepts.
- ✓ The Board discussed the elective course "Green Building & Energy Efficient Technologies" and suggested considering it as a core course, considering its growing importance in sustainable construction practices and industry demand.
- ✓ In the course "Industrial & Modular Construction Systems," members recommended including topics such as Pre-Engineered Buildings (PEB), Monolithic Construction, Insulated Construction, Composite Construction, and Polymer Wall Construction to provide students with exposure to modern construction systems.
- ✓ Members also advised including the concept of progressive collapse and relevant IS Code provisions within the syllabus to enhance students' understanding of structural safety and resilience.
- ✓ The remaining elective courses were approved without major modifications. However, members advised faculty to ensure that the recommended textbooks comprehensively cover the syllabus and suggested including at least one Indian author and one foreign author in the reference list.
- ✓ The BoS members strongly emphasized the need to initiate summer internship programs for students. Mr. C. A. Prasad assured support in providing internship opportunities in and around Hyderabad for interested students.
- ✓ The department expressed its gratitude to the members and industry representatives for extending support, providing valuable industry contacts, and facilitating internship opportunities for students.
- ✓ During the review of the slow learners' report for the Academic Year 2025–26, II Semester, members observed improvement in student performance. However, they suggested conducting regular assessments to ensure that students possess strong fundamental knowledge and conceptual understanding.
- ✓ Finally, the members appreciated the ongoing Research and Development (R&D) activities within the department. They encouraged the department to organize national and international conferences in the upcoming academic year to promote academic interaction, research collaboration, and institutional visibility.

The following recommendations and approvals are made after the discussion:

1. BoS Members approved the program outcomes, program specific outcomes & the course structure with syllabus of core and elective for M. Tech., Sustainable Smart Construction programme and it follows based on the NEP 2020.
2. SDG mapping and incorporation of the IKS components in the syllabus is approved.
3. The department should strengthen industry-oriented learning by providing hands-on training in software tools such as REVIT and PRIMAVERA, organizing site visits, and facilitating summer internships in reputed consultancy and construction organizations.

Based on the suggestions given by the members, the chairperson of BoS told that, those suggestions would be incorporated appropriately in the curriculum and syllabi of the regulation R25 C26 and this will be recommended to the Academic Council of VFSTR for the approval.

There being no further points for discussion, the Chairperson thanks all the external, internal, invited members and announced that the meeting was concluded.



Member Secretary

Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi, Guntur-522213

HoD - CE
Head
Department of Civil Engineering
Vignan's University
Vadlamudi, Guntur-522 213

Chairperson

Dr. M. Ramakrishna
Dean, School of Civil Engineering

VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be UNIVERSITY)
Estd. u/s 3 of UGC Act 1956
NAAC A+

VIGNAN'S
FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH

School of Core Engineering
Department of Civil Engineering
APPENDIX - I
COURSE STRUCTURE

Pre - Semester

S. No	Title of the course	L	T	P	SL	C	Course type
1	Orientation Session	0	2	0	0	1	Binary graded
2	IT workshop and cyber security	0	0	2	0	1	Binary graded
	Total	**0**	**2**	**2**	**0**	**2**	

I Year I Semester

S. No	Title of the course	L	T	P	SL	C	Course type
1	Advanced Construction Materials & Methods	3	2	0	2	4	Professional Core
2	Sustainable Construction Practices	3	2	0	2	4	Professional Core
3	Structural Health Monitoring & Sensors	2	2	2	2	4	Professional Core
4	Department Elective - I	3	2	0	3	4	Elective
5	Teaching Assistantship	0	0	2	0	1	Binary graded
6	Indian Knowledge System	0	2	0	0	1	Binary graded
7	Work-in-lieu of a course*					2	Elective & Floating Credit
	Sub Total	**11**	**10**	**04**	**11**	**20**	
8	Add on course -1					3	
	Total	**11**	**10**	**04**	**11**	**23**	

VIGNAN'S

School of Core Engineering
Department of Civil Engineering

I Year II Semester

S. No	Title of the course	L	T	P	SL	C	Course type
1	Smart Infrastructure & IoT in Construction	3	2	0	3	4	Professional Core
2	BIM and Digital Construction Management	2	2	2	2	4	Professional Core
3	Department Elective - 2	3	2	0	3	4	Elective
4	Department Elective - 3	3	2	0	3	4	Elective
5	Research Methodology and IPR	1	2	0	1	2	Interdisciplinary
6	Interdepartmental Project	0	0	2	0	1	Project
7	Teaching Assistantship	0	0	2	0	1	Binary graded
	Sub Total	**12**	**10**	**6**	**12**	**20**	
8	Add on course -2					3	
	Total	**12**	**10**	**6**	**12**	**23**	

II Year I Semester

S. No	Title of the course	L	T	P	SL	C	Course type
1	Project	0	2	24	0	13	Project
2	Industry support Internship						
	Sub Total	**0**	**2**	**24**	**0**	**13**	
3	Add on course -3 (MOOCs Course)					3	
	Total	**0**	**2**	**24**	**0**	**16**	

VIGNAN'S

School of Core Engineering
Department of Civil Engineering

II Year II Semester

S. No	Title of the course	L	T	P	SL	C	Course type
1	Project	0	2	24	0	13	Project
2	Industry support Internship						
	Sub Total	**0**	**2**	**24**	**0**	**13**	
3	Add on course -4 (MOOCs Course)					3	
	Total	**0**	**2**	**24**	**0**	**16**	

DEPARTMENT ELECTIVES

S. No	Title of the course	L	T	P	C
1	Construction Robotics & Automation	3	2	0	4
2	AI & Machine Learning in Construction	3	2	0	4
3	Virtual Reality (VR) & Augmented Reality (AR) in Construction	3	2	0	4
4	Prefabrication & 3D Printed Concrete Structures	3	2	0	4
5	Construction Project Risk Management	3	2	0	4
6	Smart Transportation & Mobility Infrastructure	3	2	0	4
7	Seismic-Resistant and Disaster-Resilient Structures	3	2	0	4
8	Green Building and energy efficient Technologies	3	2	0	4
9	Industrial & Modular Construction Systems	3	2	0	4
10	Advanced Low-Carbon & Eco-Friendly Construction Materials	3	2	0	4

Member Secretary
Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi, Guntur-522213

HoD-CE
Head
Department of Civil Engineering
Vignan's University
Vadlamudi, Guntur-522 213

Chairperson
Dr. M. Ramakrishna
Dean, School of Core Engineering

VIGNAN'S
(Deemed to be UNIVERSITY)

VIGNAN'S

School of Core Engineering
Department of Civil Engineering

II Year II Semester

S. No	Title of the course	L	T	P	SL	C	Course type
1	Project	0	2	24	0	13	Project
2	Industry support Internship						
	Sub Total	**0**	**2**	**24**	**0**	**13**	
3	Add on course -4 (MOOCs Course)					3	
	Total	**0**	**2**	**24**	**0**	**16**	

DEPARTMENT ELECTIVES

S. No	Title of the course	L	T	P	C
1	Construction Robotics & Automation	3	2	0	4
2	AI & Machine Learning in Construction	3	2	0	4
3	Virtual Reality (VR) & Augmented Reality (AR) in Construction	3	2	0	4
4	Prefabrication & 3D Printed Concrete Structures	3	2	0	4
5	Construction Project Risk Management	3	2	0	4
6	Smart Transportation & Mobility Infrastructure	3	2	0	4
7	Seismic-Resistant and Disaster-Resilient Structures	3	2	0	4
8	Green Building and energy efficient Technologies	3	2	0	4
9	Industrial & Modular Construction Systems	3	2	0	4
10	Advanced Low-Carbon & Eco-Friendly Construction Materials	3	2	0	4

Member Secretary
Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi, Guntur-522213

HoD-CE
Head
Department of Civil Engineering
Vignan's University
Vadlamudi, Guntur-522 213

Chairperson
Dr. M. Ramakrishna
Dean, School of Core Engineering

VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be UNIVERSITY)

VIGNAN'S

School of Core Engineering
Department of Civil Engineering
APPENDIX - II

List of Courses that Enables Employability or Entrepreneurship or Skill Development			
S. No.	**Course Title**	**Year of Introduction**	**Employability / Entrepreneurship /Skill development**
1	Advanced Construction Materials & Methods	2026	**Employability/Skill Development:** It emphasizes industry-oriented advanced construction materials, modern construction methods, BIM, automation, sustainable technologies, and specialized construction techniques that enhance students' technical competency and prepare them for employment in the construction and infrastructure industry.
2	Sustainable Construction Practices	2026	**Employability/Skill Development:** It equips students with professional knowledge in sustainability assessment, life cycle analysis, carbon management, green building rating systems, and sustainable infrastructure practices that are highly demanded in the modern construction and green building industry. The course prepares students for careers in sustainable construction consultancy, green building certification, environmental assessment, and smart infrastructure development.
3	Structural Health Monitoring & Sensors	2026	**Employability:** It equips students with advanced knowledge in Structural Health Monitoring (SHM), sensors, Artificial Intelligence, Machine Learning, IoT, and smart infrastructure technologies that are highly demanded in modern infrastructure, smart city, transportation, and structural safety industries. The course prepares students for professional roles in infrastructure monitoring, structural diagnostics, smart construction, and intelligent maintenance systems.
4	Smart Infrastructure & IoT in Construction	2026	**Employability:** As it equips students with advanced knowledge in smart infrastructure systems, IoT sensors, AI, machine learning, BIM integration, digital twins, remote sensing, and smart monitoring technologies that are highly relevant to modern civil engineering and smart city industries. The course prepares students for emerging professional roles in intelligent infrastructure management, smart transportation systems, infrastructure analytics, and sustainable urban development.

5	BIM and Digital Construction Management	2026	**Employability:** It provides practical and industry-oriented knowledge in BIM, digital construction technologies, 4D & 5D project management, digital twins, IoT, AI, AR/VR, and sustainable construction practices, which are highly demanded in modern construction and infrastructure industries. The course prepares students for professional roles in BIM coordination, digital project management, smart construction, and integrated infrastructure planning.
6	Construction Robotics & Automation	2026	**Employability:** It equips students with advanced knowledge in construction robotics, automation, AI, machine learning, BIM integration, drone technology, and digital construction systems that are increasingly demanded in modern smart construction and infrastructure industries. The course prepares students for emerging roles in automated construction, robotic project execution, digital construction management, and intelligent infrastructure development.
7	AI & Machine Learning in Construction	2026	**Employability:** It equips students with advanced knowledge in Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision, BIM integration, IoT, Digital Twins, and AI-driven smart construction technologies that are highly demanded in modern infrastructure, smart city, and digital construction industries. The course prepares students for emerging professional roles in AI-based construction analytics, intelligent infrastructure systems, predictive maintenance, and smart construction management.
8	Virtual Reality (VR) & Augmented Reality (AR) in Construction	2026	**Employability:** It provides students with advanced knowledge and practical exposure in AR/VR technologies, Unity 3D, BIM integration, digital twins, immersive visualization, and smart construction applications that are increasingly demanded in the Architecture, Engineering, and Construction (AEC) industry. The course prepares students for emerging roles in digital construction visualization, virtual project simulation, smart infrastructure management, and immersive technology-based construction planning.
9	Prefabrication & 3D Printed Concrete Structures	2026	**Employability:** Students with advanced knowledge in prefabrication systems, modular construction, precast technologies, 3D printed concrete, BIM integration, automation, and Industry 4.0 concepts that are highly demanded in modern industrialized and smart construction sectors. The course prepares students for professional roles in precast industries, modular construction, digital fabrication, and advanced construction technology implementation.

10	Construction Project Risk Management	2026	**Employability:** As it equips students with advanced knowledge in construction risk analysis, project safety, AI-based risk prediction, BIM-integrated risk management, and resilient infrastructure planning, which are highly required in modern construction, infrastructure, and project management industries.
11	Smart Transportation & Mobility Infrastructure	2026	**Employability:** Students with advanced knowledge in intelligent transportation systems, smart mobility technologies, AI-based traffic management, GIS, IoT, digital twins, and sustainable transportation infrastructure that are highly demanded in modern urban infrastructure and smart city development sectors. The course prepares students for professional roles in smart transportation planning, intelligent traffic management, mobility analytics, and sustainable transportation system development.
12	Seismic-Resistant and Disaster-Resilient Structures	2026	**Employability:** Students with advanced knowledge in low-carbon construction materials, sustainable binders, recycled construction materials, life-cycle assessment, carbon accounting, and green infrastructure practices that are highly demanded in sustainable construction, environmental consultancy, and green building industries. The course prepares students for professional roles in sustainable material design, carbon footprint assessment, and eco-friendly infrastructure development.
13	Green Building and energy efficient Technologies	2026	**Employability/Skill development:** Students with advanced knowledge in green building technologies, energy-efficient systems, renewable energy integration, life cycle assessment, carbon management, and sustainable building design practices that are highly demanded in sustainable construction, green building consultancy, and smart infrastructure industries. The course prepares students for professional roles in green building design, sustainability assessment, energy management, and environmentally responsible infrastructure development.
14	Industrial & Modular Construction Systems	2026	**Employability/Skill development:** Advanced knowledge in industrialized construction systems, modular construction technologies, BIM integration, digital twins, automation, supply chain management, and sustainable modular infrastructure practices that are highly demanded in modern off-site and smart construction industries. The course prepares students for professional roles in modular construction planning, industrialized building systems, digital construction management, and advanced infrastructure development.

15	Advanced Low-Carbon & Eco-Friendly Construction Materials	2026	**Employability/Skill development:** Advanced knowledge in low-carbon construction materials, sustainable binders, recycled materials, life-cycle assessment, carbon accounting, and green infrastructure practices that are highly demanded in sustainable construction, environmental consultancy, and green building industries. The course prepares students for professional roles in sustainable material technology, carbon footprint assessment, and eco-friendly infrastructure development.

Member Secretary
Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi, Guntur-522213

HoD-CE
Head
Department of Civil Engineering
Vignan's University
Vadlamudi, Guntur-522 213

Chairperson
Dr. M. Ramakrishna
Dean, School of Core Engineering

VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be UNIVERSITY)
Estd. u/s 3 of UGC Act 1956 NAAC A+

School of Core Engineering
Department of Civil Engineering
APPENDIX - III
List of New Courses

S. No.	Course Title	% of Changes	Justification for Changes
1	Advanced Construction Materials & Methods	100%	It equips M.Tech students with advanced knowledge in sustainable materials, modern construction methods, BIM, automation, robotics, digital construction technologies, and rehabilitation techniques, thereby enhancing their professional competency and preparing them for employment in emerging smart infrastructure and sustainable construction sectors.
2	Sustainable Construction Practices	100%	To address the growing global need for sustainable infrastructure development and environmentally responsible construction practices. The course provides advanced knowledge on sustainability concepts, life cycle assessment, carbon management, green building rating systems, and energy-efficient construction, which are essential for modern sustainable construction engineering.
3	Structural Health Monitoring & Sensors	100%	To address the growing need for intelligent infrastructure monitoring, structural safety assessment, and real-time health monitoring of modern civil engineering structures using advanced sensing technologies, Artificial Intelligence, IoT, and smart infrastructure systems.
4	Smart Infrastructure & IoT in Construction	100%	To address the rapid advancement of smart infrastructure technologies, IoT-enabled monitoring systems, Artificial Intelligence, digital twins, and data-driven infrastructure management in modern civil engineering. The course provides students with advanced knowledge required for planning, monitoring, maintaining, and developing intelligent, sustainable, and resilient infrastructure systems for future smart cities and urban development.
5	BIM and Digital Construction Management	100%	To address the increasing global adoption of Building Information Modeling (BIM) and digital construction technologies in planning, execution, monitoring, and lifecycle management of infrastructure projects. The course equips students with advanced digital competencies required for efficient, sustainable, and technology-driven construction management practices.
6	Construction Robotics & Automation	100%	To address the rapid technological transformation occurring in the construction industry through automation, robotics, artificial intelligence, and smart construction technologies. The course enables students to understand and apply modern robotic and automated systems for improving construction productivity, safety, precision, sustainability, and digital project execution.
7	AI & Machine Learning in Construction	100%	The increasing adoption of Artificial Intelligence, Machine Learning, and digital technologies in modern civil engineering and infrastructure management. The course enables students to apply intelligent data-driven techniques for automation, structural monitoring, project optimization, sustainability assessment, and smart infrastructure development.

8	Virtual Reality (VR) & Augmented Reality (AR) in Construction	100%	To address the growing adoption of immersive technologies such as AR, VR, and digital twins in modern construction infrastructure visualization, safety training, and smart project management. The course enables students to develop advanced digital competencies required for interactive construction planning, virtual simulation, and intelligent infrastructure management.
9	Prefabrication & 3D Printed Concrete Structures	100%	Address the increasing demand for industrialized construction methods, rapid urban infrastructure development, sustainable construction practices, and automation-driven construction technologies. The course provides students with advanced understanding of prefabrication and 3D concrete printing technologies for efficient, sustainable, and technology-enabled construction practices.
10	Construction Project Risk Management	100%	To address the increasing complexity, uncertainty, and safety challenges associated with modern infrastructure and smart construction projects. The course enables students to develop competency in identifying, analyzing, and managing technical, financial, environmental, and digital risks in sustainable construction projects.
11	Smart Transportation & Mobility Infrastructure	100%	To address the growing need for intelligent, sustainable, and technology-driven transportation systems in smart cities and urban infrastructure development. The course enables students to understand and apply digital technologies, AI, IoT, and sustainable mobility concepts for efficient transportation planning, monitoring, and infrastructure management.
12	Seismic-Resistant and Disaster-Resilient Structures	100%	The increasing global emphasis on reducing carbon emissions, promoting sustainable construction materials, and achieving environmentally responsible infrastructure development. The course enables students to understand and apply low-carbon technologies, circular construction practices, and sustainable material innovations for future green infrastructure systems.
13	Green Building and energy efficient Technologies	100%	The increasing global demand for energy-efficient, low-carbon, and environmentally sustainable buildings. The course enables students to develop competency in green building rating systems, climate-responsive architecture, renewable energy integration, and sustainable construction practices essential for future smart and sustainable infrastructure development.
14	Industrial & Modular Construction Systems	100%	The growing demand for rapid, efficient, sustainable, and industrialized construction practices in modern infrastructure development. The course enables students to understand and apply modular construction technologies, digital integration, automation, and sustainable industrial construction methods for future-ready smart infrastructure systems.
15	Advanced Low-Carbon & Eco-Friendly Construction Materials	100%	Increasing global focus on reducing carbon emissions, promoting sustainable construction materials, and achieving environmentally responsible infrastructure development. The course enables students to understand and apply low-carbon technologies, circular construction practices, and sustainable material innovations for future green infrastructure systems.

Member Secretary
Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi, Guntur-522213

HoD-CE
Head
Department of Civil Engineering
Vignan's University
Vadlamudi, Guntur-522 213

Dr. M. Chandrasekhrishna
Dean, School of Core Engineering

VIGNAN'S
Foundation for Science, Technology
(Deemed to be UNIVER
Estd. u/s 3 of UGC Act 1956
NA

School of Core Engineering
Department of Civil Engineering
APPENDIX - IV
List of Courses in the R25-C26 Curriculum Incorporating IKS

S. No.	Course Title	Type of Course	Module (Unit)	IKS Components Incorporated
1	Advanced Construction Materials & Methods	Program Core	M1 (U1, U2) M2 (U1, U2 & U3)	"Bamboo and Engineered Timber" under Sustainable and Green Building Materials. The course integrates traditional Indian eco-friendly construction practices with modern sustainable construction technologies, thereby promoting indigenous, sustainable, and resource-efficient building methods.
2	Sustainable Construction Practices	Program Core	M1 (U1, U2) M2 (U1, U2 & U3)	The concept reflects traditional Indian construction philosophy that emphasizes resource efficiency, climate-responsive buildings, natural ventilation, locally available materials, and environmentally sustainable living practices followed in traditional Indian architecture.
3	Structural Health Monitoring & Sensors	Program Core	M1 (U1, U2) M2 (U1, U2 & U3)	NA
4	Smart Infrastructure & IoT in Construction	Program Core	M1 (U1, U2) M2 (U1, U2 & U3)	NA
5	BIM and Digital Construction Management	Program Core	M1 (U1, U2) M2 (U1, U2 & U3)	NA
6	Construction Robotics & Automation	Program Core	M1 (U1, U2) M2 (U1, U2 & U3)	NA
7	AI & Machine Learning in Construction	Department Elective	M1 (U1, U2) M2 (U1, U2 & U3)	NA
8	Virtual Reality (VR) & Augmented Reality (AR) in Construction	Department Elective	M1 (U1, U2) M2 (U1, U2 & U3)	NA
9	Prefabrication & 3D Printed Concrete Structures	Department Elective	M1 (U1, U2) M2 (U1, U2 & U3)	NA
10	Construction Project Risk Management	Department Elective	M1 (U1, U2) M2 (U1, U2 & U3)	Traditional Indian construction practices historically emphasized climate-responsive planning, disaster resilience, and sustainable settlement development, which align with modern concepts of resilient infrastructure and risk mitigation.
11	Smart Transportation & Mobility Infrastructure	Department Elective	M1 (U1, U2) M2 (U1, U2 & U3)	Traditional Indian transportation systems historically promoted sustainable and low-carbon mobility practices such as walking, cycling, and community-based transportation, which align with modern concepts of sustainable and inclusive transportation infrastructure.
12	Seismic-Resistant and Disaster-Resilient Structures	Department Elective	M1 (U1, U2) M2 (U1, U2 & U3)	Bamboo and natural fibre construction materials reflect traditional Indian sustainable building practices that emphasize the use of locally available, eco-friendly, renewable, and climate-responsive construction materials.

13	Green Building and energy efficient Technologies	Department Elective	M1 (U1, U2) M2 (U1, U2 & U3)	Traditional Indian architectural practices historically emphasized passive cooling, ventilation, daylight utilization, courtyard planning, and climate-responsive design principles that align with modern sustainable and energy-efficient building concepts.
14	Industrial & Modular Construction Systems	Department Elective	M1 (U1, U2) M2 (U1, U2 & U3)	Traditional Indian construction systems historically adopted modular planning concepts based on proportional dimensions and standardized layouts in temple architecture and vernacular settlements, which align with modern modular coordination principles.
15	Advanced Low-Carbon & Eco-Friendly Construction Materials	Department Elective	M1 (U1, U2) M2 (U1, U2 & U3)	Bamboo and natural fibre-based construction materials reflect traditional Indian sustainable building practices that emphasize the use of locally available, renewable, eco-friendly, and climate-responsive materials in construction.

Member Secretary

HoD-CE

Head
Department of Civil Engineering
Vignan's University
Vadlamudi. Guntur-522 213

Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi. Guntur-522213

Chairperson

Dr. M. Ramakrishna
Dean, School of Core Engineering

VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be UNIVERSITY)
Estd. u/s 3 of UGC Act 1956
NAAC A+ Accredited

VIGNAN'S
FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH
(Deemed to be University) - Estd. u/s 3 of UGC Act 1956

School of Core Engineering
Department of Civil Engineering
APPENDIX IV

Details of IKS Components Incorporated in R25-C26 Curriculum

Course Type	Total number of Courses	Number of Courses Incorporating IKS	Percentage
Professional Core	05	02	40%
Department Elective	10	06	60%
Total	**15**	**8**	**53.33%**

Member Secretary

Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi, Guntur-522213

HoD-CE

Head
Department of Civil Engineering
Vignan's University
Vadlamudi, Guntur-522 213

Chairperson
Dr. M. Ramakrishna
Dean, School of Core Engineering

VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be UNIVERSITY)
-Estd. u/s 3 of UGC Act 1956 NAAC A+

School of Core Engineering
Department of Civil Engineering
APPENDIX - V
List of Courses in the R25-C26 Curriculum Incorporating SDGs

S. No.	Course Title	Type of Course	SDGs Covered	Justification
1	Advanced Construction Materials & Methods	Program Core	9	The syllabus supports SDG 9 through the inclusion of advanced construction materials, BIM, automation, robotics, 3D printing, smart infrastructure technologies, and modern construction methods that promote innovation, industrial advancement, and resilient infrastructure development.
			11	The syllabus aligns with SDG 11 by focusing on sustainable and green building materials, low-carbon construction practices, rehabilitation and retrofitting techniques, seismic strengthening, and smart construction technologies that contribute to safe, sustainable, and resilient urban development.
2	Sustainable Construction Practices	Program Core	7	such as life cycle energy use in buildings, embodied energy, operational energy, and Net Zero Energy Buildings, which promote energy-efficient and sustainable building practices.
			9	Emphasizing sustainable infrastructure development, life cycle assessment, carbon management, and green engineering principles for innovative and resilient construction practices.
			11	Sustainable construction practices, green building rating systems, carbon reduction strategies, and environmentally responsible urban infrastructure development.
			12	Focusing on resource efficiency, life cycle assessment, carbon footprint reduction, and sustainable utilization of materials in construction activities.
			13	Through carbon management, emission reduction methods, green building concepts, and sustainable construction approaches aimed at minimizing environmental impact and climate change effects.
			9	Through advanced structural monitoring technologies, AI-based damage detection, IoT-enabled infrastructure systems, and smart monitoring techniques that enhance resilient and innovative infrastructure development.

3	Structural Health Monitoring & Sensors	Program Core	11	By promoting real-time monitoring, structural safety, smart city infrastructure, and intelligent maintenance systems for sustainable and safer urban infrastructure.
			13	By enabling early damage detection, preventive maintenance, and resilience assessment of infrastructure systems, thereby reducing structural failures and environmental impacts.
4	Smart Infrastructure & IoT in Construction	Program Core	9	Through smart infrastructure technologies, AI-based monitoring, digital twins, IoT-enabled systems, and innovative infrastructure lifecycle management practices.
			11	By focusing on smart cities, sustainable urban infrastructure, intelligent transportation systems, smart water management, and disaster-resilient infrastructure development.
			13	Through climate-resilient infrastructure, disaster monitoring systems, energy-efficient infrastructure, and sustainable smart infrastructure technologies.
5	BIM and Digital Construction Management	Program Core	9	Through BIM, digital twins, AI, IoT, and advanced digital construction technologies that promote innovation, efficient infrastructure management, and smart industrial practices.
			11	By integrating BIM-based sustainable construction, lifecycle management, energy modeling, and smart infrastructure planning for sustainable urban development.
			12	Through model-based quantity take-off, lifecycle cost analysis, lean construction principles, and efficient resource utilization in construction projects.
6	Construction Robotics & Automation	Department Elective	9	Through robotics, automation, AI, digital twins, BIM integration, and smart construction technologies that promote innovation, industrial modernization, and resilient infrastructure development.
			11	Introducing smart and sustainable construction technologies, automated infrastructure systems, and efficient construction practices for future urban development.
			12	Through automated construction techniques, digital planning, predictive maintenance, and resource-efficient construction practices that reduce material wastage and improve productivity.

7	AI & Machine Learning in Construction	Department Elective	9	AI-driven infrastructure monitoring, digital twins, predictive analytics, automation, and intelligent construction technologies that promote innovation and resilient infrastructure systems.
			11	Focusing on smart buildings, AI-enabled infrastructure systems, energy optimization, and intelligent urban infrastructure management for sustainable city development.
			12	AI-based optimization, predictive maintenance, efficient resource allocation, and sustainable construction analytics that reduce wastage and improve construction efficiency.
			13	AI applications in green building prediction, energy-efficient infrastructure systems, sustainability optimization, and smart environmental monitoring practices.
8	Virtual Reality (VR) & Augmented Reality (AR) in Construction	Department Elective	9	AR/VR technologies, BIM integration, digital twins, and immersive construction systems that promote innovation and advanced infrastructure management practices.
			11	Enabling smart infrastructure visualization, sustainable construction planning, facility management, and intelligent urban development using immersive technologies.
			4	VR-based learning, interactive simulation, and immersive training technologies that enhance technical education and practical understanding in construction engineering.
9	Prefabrication & 3D Printed Concrete Structures	Department Elective	9	Industrialized construction systems, 3D printing technologies, BIM integration, automation, and innovative prefabrication techniques for resilient infrastructure development.
			11	Promoting rapid, efficient, and sustainable construction methods suitable for smart urban infrastructure and affordable housing development.
			12	Through material optimization, waste reduction, energy-efficient construction practices, and sustainable use of construction resources in prefabrication and 3D printing technologies.
			9	Through advanced risk assessment methods, AI-based project monitoring, BIM-integrated risk management, and resilient infrastructure planning practices.

	Construction Project Risk Management	Department Elective	11	Focusing on disaster-resilient infrastructure, sustainable urban development, construction safety, and smart city risk management systems.
			13	Through climate risk assessment, disaster mitigation strategies, sustainable infrastructure planning, and resilience-based construction management practices.
11	Smart Transportation & Mobility Infrastructure	Department Elective	9	Intelligent transportation systems, AI-based traffic management, IoT-enabled monitoring, digital twins, and smart transportation infrastructure technologies.
			11	By focusing on sustainable urban mobility, smart public transportation, inclusive transportation systems, and climate-resilient transportation infrastructure for sustainable city development.
			13	Green mobility infrastructure, electric vehicle integration, low-carbon transportation systems, and sustainable transportation planning practices aimed at reducing environmental impacts.
12	Seismic-Resistant and Disaster-Resilient Structures	Department Elective	9	Through innovative low-carbon materials, geopolymer binders, recycled construction materials, and sustainable infrastructure material technologies.
			12	Recycled aggregates, construction waste utilization, circular economy practices, sustainable material selection, and efficient resource utilization in construction.
			13	Through carbon footprint reduction, low-carbon cement systems, carbon sequestration technologies, and sustainable construction practices aimed at minimizing greenhouse gas emissions.
13	Green Building and energy efficient Technologies	Department Elective	7	Renewable energy integration, solar photovoltaic systems, energy-efficient building systems, smart energy management, and Net Zero Energy Building concepts.
			9	Sustainable building technologies, smart building automation systems, IoT-enabled energy management, and innovative green infrastructure practices.
			11	Green building design, climate-responsive architecture, sustainable urban infrastructure, and environmentally responsible building practices.

			12	Through life cycle assessment, embodied energy analysis, waste minimization, circular economy concepts, and sustainable material utilization in buildings.
			13	through carbon footprint reduction, low-carbon construction practices, energy-efficient building systems, and climate-responsive sustainable building design.
14	Industrial & Modular Construction Systems	Department Elective	9	Industrialized construction systems, BIM integration, digital twins, robotics, automation, and innovative modular infrastructure technologies.
			11	By promoting rapid, sustainable, and resource-efficient modular construction systems suitable for smart urban infrastructure and housing development.
			12	Through waste minimization, lean construction, lifecycle assessment, circular economy practices, and efficient material utilization in modular construction.
			13	Through carbon reduction strategies, sustainable industrial construction practices, energy-efficient modular systems, and environmentally responsible infrastructure development.
15	Advanced Low-Carbon & Eco-Friendly Construction Materials	Department Elective	9	Through innovative low-carbon materials, geopolymer binders, recycled construction materials, and sustainable infrastructure material technologies.
			11	By promoting environmentally sustainable construction materials and low-carbon infrastructure systems for sustainable urban development.
			12	Through recycled aggregates, construction waste utilization, circular economy practices, sustainable material selection, and efficient resource utilization in construction.
			13	Through carbon footprint reduction, low-carbon cement systems, carbon sequestration technologies, and sustainable construction practices aimed at minimizing greenhouse gas emissions.

Member Secretary
Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi, Guntur-522213

HoD-CE
Head
Department of Civil Engineering
Vignan's University
Vadlamudi, Guntur-522 213

Chairperson
Dr. M. Ramakrishna
Dean, School of Core Engineering
VIGNAN
Foundation for Science, Technolo
(Deemed to be UNIV
Estd. u/s 3 of UGC Act '56

VIGNAN'S
FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH
(Deemed to be University) - Estd. u/s 3 of UGC Act 1956

School of Core Engineering
Department of Civil Engineering
APPENDIX V

Details of SDGs Components Incorporated in R25-C26 Curriculum

Course Type	Total number of Courses	Number of Courses Incorporating IKS	Percentage
Professional Core	05	05	100%
Department Elective	10	10	100%
Total	**15**	**15**	**100%**

Member Secretary
Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi, Guntur-522213

HoD-CE
Head
Department of Civil Engineering
Vignan's University
Vadlamudi, Guntur-522 213

Chairperson
Dr. M. Ramakrishna
Dean, School of Core Engineering
VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be UNIVERSITY)
Estd. u/s 3 of UGC Act 1956

VIGNAN'S

School of Core Engineering
Department of Civil Engineering

Mapping of 25C26 Courses with individual of SDGs

SDG No.	SDG Name	No. of Mapped Courses	Percentage of Courses Mapped
1	No Poverty	0	-
2	Zero Hunger	0	-
3	Good Health and Well-Being	0	-
4	Quality Education	1	6.67%
5	Gender Equality	0	-
6	Clean Water and Sanitation	0	-
7	Affordable and Clean Energy	2	13.33%
8	Decent Work and Economic Growth	0	-
9	Industry, Innovation and Infrastructure	15	100%
10	Reduced Inequalities	0	-
11	Sustainable Cities and Communities	14	93.33%
12	Responsible Consumption and Production	9	60%
13	Climate action	10	66.67%
14	Life Below Water	0	-
15	Life on Land	0	-
16	Peace, Justice and Strong Institutions	0	-
17	Partnerships for the Goals	0	-

Member Secretary
Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi, Guntur-522213

HoD-CE
Head
Department of Civil Engineering
Vignan's University
Vadlamudi, Guntur-522 213

Chairperson
Dr. M. Ramakrishna
Dean, School of Core Engineering
VIGNAN'S
(Deemed to be UNIVERSITY)
NAAC

VIGNAN'S
FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH

School of Core Engineering
Department of Civil Engineering
APPENDIX VI

Action Taken Report (ATR) on the suggestions given in earlier BoS Meeting

S. No	Action Point	Response
1	Strengthen the curriculum with advanced sustainable construction concepts aligned with global environmental standards and SDGs.	Professional core courses such as Sustainable Construction Practices and electives like Green Building and Energy Efficient Technologies and Advanced Low-Carbon & Eco-Friendly Construction Materials have been introduced to address sustainability, embodied energy reduction, carbon footprint mitigation, and environmentally responsible construction practices.
2	Incorporate Industry 4.0 technologies and digital transformation concepts in construction engineering education.	Specialized courses including BIM and Digital Construction Management, Smart Infrastructure & IoT in Construction, AI & Machine Learning in Construction, and Construction Robotics & Automation have been included to integrate digitalization, automation, sensor-based monitoring, and intelligent construction systems into the curriculum.
3	Enhance practical exposure and interdisciplinary learning through laboratory, project, and industry-oriented components.	The curriculum includes laboratory-integrated professional core courses, Interdepartmental Project, Teaching Assistantship, industry-supported internships, and full-semester project work to improve experiential learning, multidisciplinary collaboration, and industry readiness.
4	Introduce emerging technologies relevant to futuristic smart infrastructure and resilient construction systems.	Elective courses such as Virtual Reality (VR) & Augmented Reality (AR) in Construction, Prefabrication & 3D Printed Concrete Structures, Industrial & Modular Construction Systems, and Seismic-Resistant and Disaster-Resilient Structures have been incorporated to address modern construction innovations and resilient infrastructure development.

Member Secretary
Assistant Professor
Dept. of Civil Engineering
VFSTR (Deemed to be University)
Vadlamudi, Guntur-522213

HoD-CE
Head
Department of Civil Engineering
Vignan's University
Vadlamudi, Guntur-522 213

Chairperson
Dr. M. Ramakrishna
Dean, School of Core Engineering

VIGNA
Foundation for Science, Tech
(Deemed to be UN
Est. u/s 3 of UGC Act