

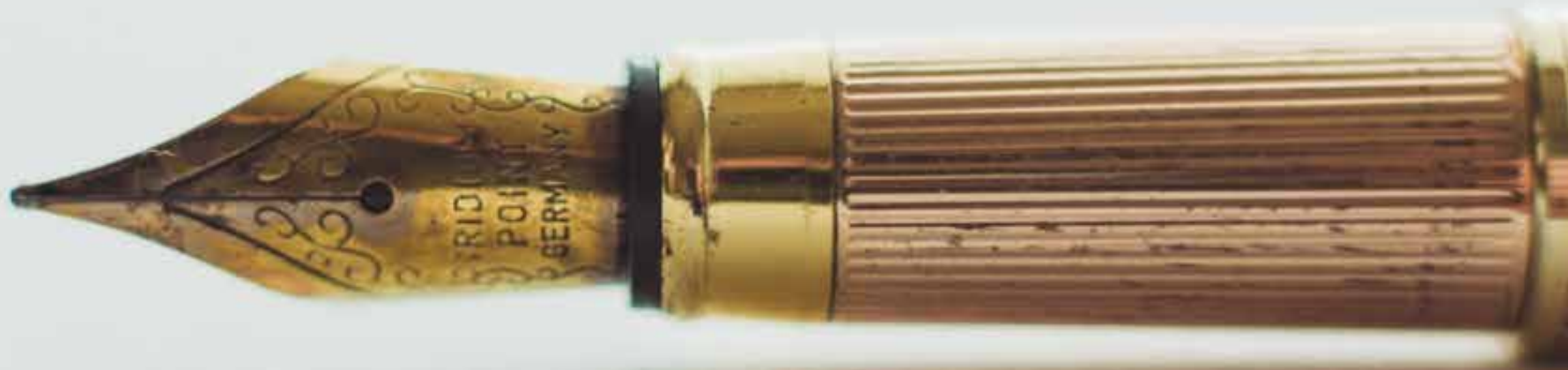
**DEPARTMENT  
OF  
CIVIL  
ENGINEERING**

# **MAGAZINE**

**2018-2019**



**STELLA MARY'S  
COLLEGE OF ENGINEERING**



# MESSAGES

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# Chairman's Message

Dr.Nazerath Charles



**The college is run by nova educational trust started in the year 2007, to provide the highest quality educational and research facilities to the students across the country. The institution supports students in achieving their aims and also ensure that they maintain good academic standards. The institution educates the students with all essential knowledge and skills to become a successful engineer. The institution also strongly believes that education is the key to a nation's progress and hence aims in creating responsible citizens of our nation.**

# CEO's Message

## Mr. Carol Judeson



**Education is a gateway to success. I wish all students to acquire knowledge through professional skill development. Stella Mary's college of Engineering enable students to gain theoretical and technical skills through interactive teaching learning process. Our Institution determined to produce true employability skill through practical training.**



# Director's Message

## Mr.P.Renjitham



**Our vision is to create technocrats who can address the needs of the society through exploration and experimentation and to uplift mankind. Our institution strongly believe in academic excellence through effective teaching and learning process. The institution also strongly believes that education is the key to a nation's progress and hence aims in creating responsible citizens of our nation. Our institution trains and equip our students to get placed in multinational companies by improving their theoritical and practical skills .**

# Principal's Message

Dr.R.Suresh Premil Kumar



**Education is about learning skills and knowledge. SMCE aims to impart strong knowledge to its students who are young and dynamic. Through a team of dedicated staff and EFFECTIVE TEACHING LEARNING PROCESS, OUR COLLEGE CREATES BEST ENGINEERS OF THE SOCIETY. Students ACQUIRE BOTH PRACTICAL AND THEORITICAL KNOWLEDGE at our institution which would turn them into a GREAT personality at the end of their course.**

# HOD's Message

## Dr.N.Vallal Perumal



**The Department of Civil Engineering Engineering, established in 2014, is one of the most dynamic departments of SMCE. All the classrooms and laboratories are fully equipped and are made available for teaching and research purposes. Classroom teaching is supplemented with Tutorials, Paper presentation, projects, internships, group assignments, educational tours and industrial visits for effective delivery of curriculum. Our students are not only academically sound but also good in extracurricular activities. Our students are also part of our college sports teams and won many zonal level prizes. Nearly 95% of our graduates are placed in good companies and few are entrepreneurs.**

**I am really delighted to tell that the Civil Department stands as one of the best department of SMCE.**



# Editor's Message

## Mr.T.Ragin



**Education always plays a vital role in the overall development and personality of an individual. Having realized this importance, SMCE aims to impart strong knowledge to its students who are young and are in thirst for it. SMCE will constantly work to provide the best knowledge to its students, through a team of dedicated staff and experienced faculty. Students are sure to get a new and good academic experience at our institution which would turn them into a holistic personality at the end of their course.**



# VISION

To emerge as a premiere institution, acknowledged as a centre for excellence imparting technical education, creating technocrats who can address the needs of the society through exploration and experimentation and uplift mankind.



# MISSION

To provide an education that transforms students, through rigorous course-work and by providing an understanding of the needs of the society and the industry.





# QUALITY POLICY



**Stella Mary's College of Engineering, committed to imparting technical education, creating technocrats**

**strives to achieve the institution's goal by :**

- Focusing on the overall development of the students in strengthening their leadership skills.**
- Building an environment that is conducive for effective teaching, learning and research.**
- Improving the job prospects of students incorporating value-added programmes to the curriculum.**
- Periodically assessing the effectiveness of the programmes offered at the institute and responding positively to the needs of the industry.**
- Contributing effectively to the growth of the nation, by exposing the students to demonstrate their entrepreneurship skills.**
- Adopting the best practices for quality improvement that continuously benchmarks the institution against premier institutions.**



# Engineering

# CIVIL

## ABOUT THE DEPARTMENT

**The civil engineering department was started in the year 2014 with the intake of 60 students. The department has steadily grown in all spheres such as student strength, physical infrastructures and central and department library. The department has well qualified and experienced faculty. The department develops a long term relationship with industries and guides the student effectively. The students are provided with high level “Pathways” that enable them to gain access to high tech career opportunities.**





# VISION

**To provide world class technical education with ethics and professionalism and to create civil engineer with high technical competencies who would full fill the challenges and needs of today's scenario with the help of green technology.**

# MISSION



- **To impart quality technical education, imbibing lifelong learning and concern for environment.**
- **To create job opportunities in research, industry and consultancy both nationally and internationally.**
- **To provide technical skills, leadership qualities and team spirit among the students.**
- **To establish center of excellence in emerging areas of research to find solution to the problem faced by the society.**



# Program Outcomes (POs)

- 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.**
- 2. Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.**
- 3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.**
- 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.**
- 5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.**
- 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.**



An aerial photograph of a city skyline at sunset. The sky is a mix of orange, yellow, and blue, with the sun low on the horizon. The city below is densely packed with skyscrapers and buildings, many of which are illuminated with warm lights. The overall scene is a vibrant and detailed urban landscape.

**7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.

**8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**9. Individual and team work:** Function effectively as an individual and as a member or leader in diverse teams, and in multidisciplinary settings.

**10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.



## Program specific Outcomes (PSOs)

**PSO 1 :** Applying concepts and solving problems in the branches of Civil Engineering such as Structural, Environmental, Hydraulics, Construction Management, and Geo technical Engineering.

**PSO 2 :** Assess the environmental impact of various projects and take required measures to curb environmental deterioration

**PSO 3 :** Able to use latest soft wares pertaining to various streams of Civil Engineering.

## Program Educational Objectives (PEOs)

●**PEO1:** Graduates will have a successful career in the field of Civil Engineering by meeting the needs of industries or will become entrepreneurs.

●**PEO2:** Graduates will have a sound foundation in engineering fundamentals which is necessary to analyse engineering problems and the ability to persue higher studies.

●**PEO3:** Graduates will work collaboratively on multi-disciplinary projects by engaging in life-long learning process throughout their professional life.



# Environmental Engineering Laboratory

In this laboratory the students will be able to know the common environmental experiments relating to water and wastewater quality.



## List of Equipments

Oxygen analyzer, Spectrophotometer, Ion – selective electrode, Sodium Potassium Analyzer – Flame Photometer 5. Gas Chromatography, Atomic absorption spectroscopy (Ni, Zn, Pb), Nephlo-turbidity meter, BOD Analyser, COD Analyser, Jar Test Apparatus.

## List of Experiments

Determination of Ammonia Nitrogen in wastewater, Coagulation and Precipitation process for treating waste water, Determination of suspended, volatile, fixed and settleable solids in wastewater, B.O.D. test, C.O.D. test, Nitrate in wastewater, Phosphate in wastewater, Determination of Calcium, Potassium and Sodium, Heavy metals determination - Chromium, Lead and Zinc. (Demonstration only)

# Soil Mechanics Laboratory

Students will be able to identify physical and mechanical properties of soil in the field and laboratory settings. This includes preparing soil samples for testing, performing the test, collecting and analyzing data, interpreting the results and writing technical reports.



## List of Equipments

Sieves, Hydrometer, Liquid and plastic limit apparatus, Shrinkage limit apparatus, Proctor compaction apparatus, UTM of minimum of 20KN capacity, Direct shear apparatus, Thermometer, Field density measuring device, Triaxial shear apparatus, Three gang consolidation test device.

## List of Experiments

Determination of index properties, Permeability determination (constant head and falling head methods), One dimensional consolidation test (Determination of coefficient of consolidation only), Direct shear test in cohesion-less soil, Unconfined compression test in cohesive soil, Laboratory vane Shear test in cohesive soil, Tri-axial compression test in cohesion-less soil (Demonstration only), California Bearing Ratio Test.



# Strength of materials Laboratory

Demonstrating the basic principles in the area of strength and mechanics of materials and structural analysis to the students through a series of experiments.



## List of Equipments

UTM of minimum 400 kN capacity, Torsion testing machine for steel rods, Izod impact testing machine, Hardness testing machine, Beam deflection test apparatus, Extensometer, Compressometer, Dial gauges, Le Chatelier's apparatus, Vicat's apparatus, Mortar cube moulds.

## List of Experiments

Tension test on mild steel rod, Compression test on wood, Double shear test on metal, Torsion test on mild steel rod, Impact test on metal specimen (Izod and Charpy), Hardness test on metals (Rockwell and Brinell Hardness Tests), Deflection test on metal beam, Compression test on helical spring, Deflection test on carriage spring, Test on Cement.



# Computer Laboratory

To outline the basic principles associated with CADD and to demonstrate common drafting techniques and shortcuts used by professionals. CAD (Computer Aided Design) provides a convenient mean to create designs for almost every engineering discipline.



## List of Equipments

Computer system of Pentium IV or equivalent (1 for each student) ,AUTOCAD (software).

## List of Experiments

Principles of planning, orientation and complete joinery details ,Buildings with load bearing walls 3. Buildings with sloping roof,R.C.C. framed structures, Industrial buildings – North light roof structures,Unconfined compression test in cohesive soil , Building Information Modeling.



# Survey Laboratory

**Students learn techniques for gathering field data with both traditional and modern instruments and demonstrate their proficiency on weekly lab exercises and a comprehensive semester project and final exam.**



## List of Equipments

**Total Station, Theodolites Atleast 1 for every, Dumpy level, Plane table, Pocket stereoscope, Ranging rods, Levelling staff , Cross staff, Chains, Tapes, Arrows, Hand held GPS.**

## List of Experiments

**Study of theodolite, Measurement of horizontal angles by reiteration and repetition and vertical angles, Theodolite survey traverse, Heights and distances - Triangulation - Single plane method, Tacheometry - Tangential system - Stadia system - Subtense system, Setting out works - Foundation marking - Simple curve (right/ left-handed) - Transition curve, Field observation for and Calculation of azimuth, Field work using Total Station. Principles of planning, orientation and complete joinery details , Buildings with load bearing walls 3. Buildings with sloping roof, R.C.C. framed structures, Industrial buildings – North light roof structures, Unconfined compression test in cohesive soil, Building Information Modeling.**



# Soil Mechanics Laboratory

The behavior and properties of structural materials, e.g. concrete, asphalt and steel can be better understood by detailed, well-designed, first hand experience with these materials. The students will become familiar with the nature and properties of these materials by conducting laboratory tests.



## List of Equipments

Concrete cube moulds, Concrete cylinder moulds, Concrete Prism moulds, Sieves, Concrete Mixer, Slump cone, Flow table, Vibrator, Trowels and planers, UTM – 400 kN capacity, Vee Bee Consistometer, Aggregate impact testing machine, CBR Apparatus, Los - Angeles abrasion testing machine, Marshall Stability Apparatus.

## List of Experiments

Tests on fresh concrete, Test on hardened concrete, Theodolite survey traverse, Test on aggregates, Tests on bitumen, Test on bitumen mixes.



# Hydraulics Engineering laboratory

The main objective of this lab is to build fundamental concepts combined with strong analytical and problem solving abilities that would form the backbone of many other subjects in higher educations.



## List of Equipments

Bernoulli's theorem – Verification Apparatus, Calculation of Metacentric height water tank Ship model with accessories, Measurement of velocity Pitot tube assembly, Venturimeter, Orificemeter, Flow through mouthpiece, Centrifugal pump assembly with accessories (single stage), Centrifugal pump assembly with accessories (multi stage), Reciprocating pump assembly with accessories, Deep well pump assembly set with accessories.

## List of Experiments

Flow measurement, Losses in pipes, Pumps, Turbines, Determination of meta-centric height.

# Our Teaching Faculty



**Name: Dr. N.Vallal Perumal**  
**Designation: Head, Associate Professor**  
**Qualification: M.E, Ph.D**



**Name: Mr. T.Ragin**  
**Designation: Assistant Professor**  
**Qualification: M.Tech**



**Name: Mr.S.Ravi Kumar**  
**Designation: Assistant Professor**  
**Qualification: M.E**



**Name: Mrs.Sworna K.Jancy Bai**  
**Designation: Assistant Professor**  
**Qualification: M.E**



**Name: Mrs. N. Agnes Flora**  
**Designation: Assistant Professor**  
**Qualification: M.E**



**Name: Mr.G.Amritha Gokul**  
**Designation: Assistant Professor**  
**Qualification: M.E**



**Name: Mr.J.Prakash Arul Jose**  
**Designation: Associate Professor**  
**Qualification: M.E**



**Name: Mr.I.Vijayan**  
**Designation: Assistant Professor**  
**Qualification: M.E**





**Name: Mrs. S. Indira**  
**Designation: Assistant Professor**  
**Qualification: M.E**



**Name: Ms. M. Ashni**  
**Designation: Assistant Professor**  
**Qualification: M.Tech**



**Name: Mrs. R.K. Madhumathi**  
**Designation: Assistant Professor**  
**Qualification: M.E**

## **Our Non-Teaching Faculty**



**Name: Mr. Satheesh**  
**Designation: Lab Instructor**  
**Qualification: B.E**



**Name: Ms. A. Anusha**  
**Designation: Lab Assistant**  
**Qualification: B.E**

# Student participation In Various events





# **EXPERIMENTAL INVESTIGATION ON STRENGTH OF COIR FIBRE CON- CRETE AND PARTIALLY REPLACEMENT OF COARSE AGGREGATE BY WASTE TYRE RUBBER**

## **ABSTRACT :**

**The experiment has carried out to investigate the behavioural study of coir fibre in concrete member and partially replacement of coarse aggregate by waste tyre rubber. The usage of waste tyre rubber chips in concrete is economical and environmental friendly. The coir fibre is treated by latex rubber and partially replacement of coarse aggregate by waste tyre rubber is done in concrete so that it is not to affected by moisture content present in concrete. In this experimental study 7 days,14 days and 28 days of the compressive strength for M35 is carried out using coconut fibre length of 20mm and 12 mm dia with a different percentage as 0%,1%,2%,3% and 4%.**

## **OBJECTIVES :**

- To test the properties of Concrete when rubber tyre is used as the Partial replacement of coarse aggregates.**
- Cubes of size 150×150×150 mm Size for compressive strength Cubes are casted For the testing of concrete.**
- The concrete having compression strength of 20N/mm.**



- **The strength of the Modified Concrete specimens are compared with ordinary Conventional concrete.**

## **FIELD ANALYSIS :**

**Using coir fibre in civil construction reduces environmental pollution factors and may also bring several improvements in concrete characteristics. Coir fibre used in cement improves the resistance of concrete from sulphate attack. Compressive strength is also improved up to certain percentage. Addition of coir fibre also arrests the micro cracks present in the concrete. Based on the experimental results, the following conclusions are drawn. The Latex treated coir fibre volume fraction of 3% significantly improves the overall performance of reinforced concrete members. The high strength latex treated coir fibre reinforced concrete with members. Exhibit greater reduction in crack width at all load levels compared to the control beam.**

**- G.AMIRTHA GOKUL  
Asst.Professor**





# **EXPERIMENTAL INVESTIGATION OF GEOPOLYMER CONCRETE WITH PARTIAL REPLACEMENT OF COARSE AGGREGATE BY E-WASTE**

## **ABSTRACT :**

**Geopolymer concrete is more resistant to damage than standard concrete. This experiment attempts to explore the possibility of using fly ash in the development of binding material and in the manufacturing of concrete. The production of geopolymer concrete allows fly ash to be recycled and eliminated from landfills management. Rapid growth of technology in the electronics industry have led to one of the fastest growing waste streams in the world called E-Waste. This experiment covers the use of E-Waste as partial replacement in coarse aggregate in geopolymer concrete.**

**1. What is geopolymer concrete and What is the main use of it?**

**Normal concrete use OPC as a binder whereas geopolymer user a chemical and flyash mixture as s binder. This concrete helps to reduce the stock of wastes such as flyash and also reduces (co)<sub>2</sub> by reducing demand of Portland cement.**

**2. What about the workability of concrete while using E-Waste?**

**The workability of concrete increases when the percentage of E-Waste increase. The workability of flyash with E-Waste concrete gives better result than conventional concrete.**



### **3. Is E-Waste concrete poses high strength?**

**As per our study usage of E-Waste with replacement of coarse aggregate by 20% gives higher strength when compared to nominal mix. The increase in usage of E-Waste percentage reduces the strength gradually.**

### **4. What is the main advantages of using E-Waste in concrete? Is it economical?**

**A-Waste will reduce the aggregate cost and provider a good strength for a structures. It will be reduce the landfill cost and it is energy saving.**

### **5. How did you get the E-Waste?**

**As E-Waste available in the form of loosely discarded surplus, obsolete, broken electrical or electronics devices from commercial informal recyclers have been collected which were crushed to the particle size.**

**- Mr.S.Ravi Kumar  
Asst.Professor**





# Events Conducted

Seminars were conducted in the topics of current trends in order to impart technical and practical knowledge in students. Resource from various industries were invited to share their knowledge with faculty and students.



Orientation program were conducted for newly joined students in order to improve their skills in communication, basic civil engineering, basic mathematics and various soft skills.

Value added course/certification course was offered to the students to improve their technical and employability skills. Courses on recent softwares were introduced to equip them to meet the current industrial trends.





Guest Lectures were conducted in various topics to bridge the gap in the curriculum and to meet the needs of the industries. Resource persons from various institutions and industries were invited to deliver the lectures of current importance.



PTA is actively involved in aiding smooth functioning of the college. The executive committee chaired by the HoD coordinates the activities of the PTA. Its efforts are oriented towards improving facilities in the college. It also aims in improving the personality and learning skills of their wards.

Industrial visit is an opportunity for the students to gain the practical knowledge on the functioning of various industries and it also paves a way to interact with the experienced persons working in the industry. The Students will also be exposed to the materials and machines involved in the production and manufacturing units. They also will understand the importance of teamwork while interacting with the employees.



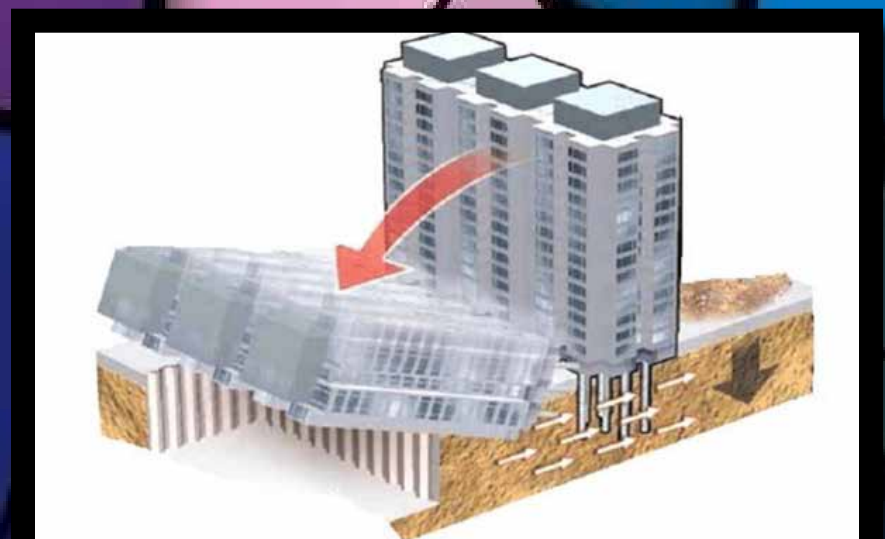


# **EXPERIMENTAL INVESTIGATION OF AXIALLY LOADED PILE**

## **GROUP SUBJECTED TO GROUND MOVEMENT**

### **NECESSITY OF THE STUDY :**

**In 2009, a 13-story residential building founded on lightly reinforced prestressed high-strength concrete (PHC) pipe piles in Shanghai collapsed completely during the excavation of an adjacent underground garage (i.e., on the southern side). The supporting structure for the deep excavation work failed, resulting in a 30m deep cave-in that spread across six lanes of Nicoll Highway. The collapse killed four people and injured three. The accident delayed the construction end date for the MRT Station. Investigations found that the most apparent cause of the collapse was the retaining wall which could not handle the stress of holding up the dumped soil. In the course of construction, excavated soil had been dumped on the northern side of the building and formed a 10-m-high fill slope before the collapse. This project aims to study the response of the building during the excavation of nearby constructed building.**







## **ABSTRACT :**

**Pile foundation is preferred while constructing a building in a weak soil ground. Pile foundations are slender members which transfers the load from low bearing capacity soil to high bearing capacity soil. Pile foundations are subjected to both vertical and lateral loads. So, designing the building considering all the possible loads becomes necessary. The Axial load acting on the building due to various sources reduces the stiffness of the foundation which in turn affects the stability of the structure. Some of the buildings may also subjected to passive force due to soil movement. Hence this study attempts to study the effect of pile group subjected to soil movement. The parameters varied are distance between pile and sheet pile wall, number of piles, pile group configuration, stiffness of pile and soil. Design charts will be plotted for the prototype piles which will be useful in the construction field.**

**- H.A.ATHIRA  
8th semester**







# Celebrations





















## Sports Achievements







## Club Activities





# Editorial Board



**Chief Editor : Mr.T.Ragin**  
**Assistant Professor**



**Co-Editor : Mrs.Sworna K.Jancy Bai**  
**Assistant Professor**

**Pradhab.P**  
**8th Semester**



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# **STELLA MARY'S**

## **COLLEGE OF ENGINEERING**