**Research laboratories**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. .**Construction Materials Development Lab(Under Concrete Lab)**   Utilization rate : 70% for Research Projects | | | | |
| **Sl.NO** | **Name of the Equipment** | **Cost (Rs)** | **Company/Make** | **Funding** |
| 1. | SCC Testing apparatus | 32684.00 | M/S AIMIL Limited | Tamil Nadu State Fund |
| 2. | Permeability Testing equipment | 195337.00 | M/S AIMIL Limited MQA103R4TF6563 | TEQIP-Phase II |
| 3. | Ball Mill | 138806.00 | M/S Testing Machine Care Center /  SELEC XE22B | COE ES TEQIP |
| 4. | Pan Mixer | 165687.00 | M/S AIMIL Limited /  CAT AIM-9891 | Tamil Nadu State Fund |
| 5. | Concrete impermeability apparatus | 106034.00 | M/S Concord Instruments Pvt Ltd | Tamil Nadu State Fund |
| 6. | Laboratory cement autoclave with analog pressure gauge digital temperature controller | 121995.00 | M/S Sempona Testing Instrument | Tamil Nadu State Fund |
| 7. | Density basket with buoyancy balance including complete stone accessories | 143646.00 | M/S Concord Instruments Pvt Ltd | Tamil Nadu State Fund |
| 1. **Structure Testing Lab(Under Strength of Materials Lab)**   Utilization rate : 80% for Research Projects | | | | |
| 1. | UPV Tester | 668955.00 | M/S PROCEQ/  UP01-001-0862, | TEQIP – Phase II |
| 2. | The concrete digital rebound hammer | 159300.00 | M/S AIMIL Ltd | TEQIP – Phase II |
| 3. | Rebar Locator | 407574.00 | M/S PROCEQ | TEQIP – Phase II |
| 4. | Multi-Level scanner | 876858.00 | M/S PROCEQ/  650AI UP01-005-0600 | TEQIP – Phase II |
| 5. | Loading Frame with 25kN, 50kN capacity | 73600.00 | M/S Sri Balaji Scientific Instruments Pvt Ltd | Tamil Nadu State Fund |
| 6. | Data Acquisition system | 342825.00 | M/S Ganther Instruments Pvt Ltd/2019-G19049 | TEQIP – Phase II |
| 7. | Impact Test Frame | 50000.00 | M/S Hitech India Equipments Pvt Ltd | Tamil Nadu State Fund |
| 8. | 5 KVA UPS system 12 V 150 AH EXIDE tubular batteries, cabinet 130 AH MS Rack | 191517.00 | M/S Novateur Electrical and digital system Pvt Ltd | Tamil Nadu State Fund |
| 9. | Electronic extensometer | 130000.00 | M/S Hitech India Equipments Pvt Ltd / FASNE , Model: FEE 5 | Tamil Nadu State Fund |
| 10. | Vickers hardness testing machine | 196455.00 | M/S Hitech India Equipments Pvt Ltd | Tamil Nadu State Fund |
| 11. | Pendulum impact testing machine | 104195.00 | M/S Hitech India Equipments Pvt | Tamil Nadu State Fund |
| 12. | Digital flexural strength testing | 177475.00 | M/S Hitech India Equipments Pvt | Tamil Nadu State Fund |
| 13. | A1 size printer for CAD application | 105000.00 | M/S IT Hub | Tamil Nadu State Fund |
| 14. | Multichannel data logger | 115500.00 | M/S Rathna controls and system | Tamil Nadu State Fund |
| 15. | Toshiba 2257-AB multifunction printer | 165900.00 | M/S Power play imaging solutions | Tamil Nadu State Fund |
| 16. | 25T loading frame | 196350.00 | M/S Sri Sastha Enterprises | Tamil Nadu State Fund |
| 17. | 100 T hydraulic jack with power pack | 219480.00 | M/S Sofeel marketing and technical services Pvt Ltd | TEQIP – Phase II |
| 18. | Accessories for modification of existing universal testing machine at column loading frame | 398840.00 | M/S Leading edge lab equipment | Tamil Nadu State Fund |
| 19. | 16 channel data logger with signal condition for 100 ton column loading frame | 186440.00 | M/S Leading edge lab equipment | Tamil Nadu State Fund |
| 20. | Strain gauge module | 151000.00 | M/S Ganther Instruments India Pvt Ltd | Tamil Nadu State Fund |
| 21. | Compression load cell of capacity 500 KN | 138000.00 | M/S Ganther Instruments India Pvt Ltd | Tamil Nadu State Fund |
| 22. | Parabolic arch unit | 371175.00 | M/S Aimil Ltd | Tamil Nadu State Fund |
| 23. | Unit of studying forces in a simple bar structure | 248535.00 | M/S Aimil Ltd | Tamil Nadu State Fund |
| **III Geotechnical Engg Lab**  Utilization rate : 80% for Research Projects | | | | |
| 1. | Ring shear test | 1444230.00 | M/S Chir-Ayu Controls Pvt Ltd/27W-F2202 | TEQIP – Phase III |
| 2. | Dynamic Pile Testing Equipment | 1690500.00 | M/S Sofeel Marketing And Technical Services Pvt Ltd/RSL203 | AICTE- MODROBS |
| 3. | Loading Frame of 50KN capacity | 191688.00 | M/S Concord Instruments Pvt Ltd | Tamil Nadu State Fund |
| 4. | Benkelman beam Deflection test apparatus | 65000.00 | M/S Concord Instruments Pvt Ltd/AIMIL-22581 | Tamil Nadu State Fund |
| 5 | Light Weight Deflectometer | 2017985.00 | M/S AIMIL Limited /LWD3031 | TEQIP –Phase II |
| **IV Geo-Environmental Lab(Under Geotechnical Lab)**  Utilization rate : 80% for Research Projects | | | | |
| 1. | Portable kit for measuring Ph,ions,Turbidity,  Electrical conductivity. | 398790.00 | M/S Shree Sai Scientific Company/Q970771  (TU2016) | State Fund |
| 2. | Muffle Furnace | 48503.00 | M/S Concord Instruments Pvt Ltd | State Fund |
| **V Centre of Excellence for Environmental Studies**  Utilization rate : 90% for Research Projects | | | | |
| 1. | Top Loading Balance | 37225.00 | SHIMADZU/BL220H | State Fund |
| 2. | Laboratory Stirrer | 12800.00 | M/S REMI/ RQ-129D | State Fund |
| 3. | Magnetic Stirrer | 34125.00 | M/S REMI/ 5MLH | State Fund |
| 4. | Shaking incubator | 199500.00 | M/S REMI/ CIS24PLUS | State Fund |
| 5. | Flame Photometer | 66255.00 | M/S Systronics /128 | State Fund |
| 6. | Willy Mill | 56700.00 | M/S Scientific Engineering | State Fund |
| 7. | Hot Air Oven | 39480.00 | M/S TECHNICO | State Fund |
| 8. | Water Bath | 19845.00 | M/S EQUITRON | State Fund |
| 9. | Balance | 96000.00 | M/S Shimadzu | State Fund |
| 10. | Flocculator (Jar Test) | 38850.00 | M/S Genesis/ JAR 6 | State Fund |
| 11. | Semi-Automatic membrane casting unit | 218000.00 | M/S Technic Incubating/ Semi | State Fund |
| 12. | Particulate sampler | 236413.00 | M/S Envirotech/ APM550 | State Fund |
| 13. | Low pressure stirred cell | 89250.00 | M/S Technic Incubating Technologies- Lab Scale | State Fund |
| 14. | Muffle Furnace | 23400.00 | M/S Technico | State Fund |
| 15. | BOD Incubator | 54080.00 | M/S Technico | State Fund |
| 16. | Deep Freezer | 58760.00 | M/S Technico/ Horizontal | State Fund |
| 17. | Digital Turbidity Meter | 22365.00 | M/S Systronics/Nephelo132 | State Fund |
| 18. | Digital pH Meter | 26350.00 | M/S Elico | State Fund |
| 19. | Digital Colony counter | 5933.00 | M/S Science World/ 362 | State Fund |
| 20. | HPLC | 2289000.00 | M/S Shimadzu/LC2010CHT | COE ES TEQIP |
| 21. | Rotary vaccum Evaporator | 144355.00 | M/S Equitron/Roteva | COE ES TEQIP |
| 22. | Cold Storage Chamber | 297349.00 | M/S F-Maxx /SZ-7524-P | COE ES TEQIP |
| 23. | Bio Diesel Rancimat | 2468620.00 | Metrohm/893 | COE ES TEQIP |
| 24. | Laminar Air Flow Chamber | 66413.00 | M/S Genuine | COE ES TEQIP |
| 25. | Sonicator | 194403.00 | M/S Labman/Pro500 | COE ES TEQIP |
| 26. | Surface area analyzer | 1820550.00 | M/S Metrohm/Belsorp-Mini Ii | COE ES TEQIP |
| 27. | CVD Furnace | 590625.00 | M/S VB Ceramic /CVD Table Top | COE ES TEQIP |
| 28. | Autoclavable Fermentor(4) | 2134650.00 | M/S Bio-Age/ Bio-Spin-O5A | COE ES TEQIP |
| 29. | Thermomixer | 320250.00 | M/S Effendorf/ Thermomixer-C220-240V | COE ES TEQIP |
| 30. | Large Volume Centrifuge | 807030.00 | M/S Sigma/2-16kl | COE ES TEQIP |
| 31. | Moisture Analyser | 98000.00 | M/S Wensa/Hmt100 | COE ES TEQIP |
| 32. | Programmable Spin | 94463.00 | M/S APEX / SPINNXG – PI | COE ES TEQIP |
| 33. | Planetary Ball Mill | 472500.00 | M/S VB Ceramics /VBCC | COE ES TEQIP |
| 34. | Water system for Ultra-pure water | 517650.00 | M/S Merk / MILLIPORE DIRECT – Q 8 UV | COE ES TEQIP |
| 35. | Ultra ProbeSonicator | 205643.00 | M/S Life Care/ENUP -500-A | COE ES TEQIP |
| 36. | Ultra sonic Bath | 37427.00 | M/S Chemlabs/CHEM-30 | COE ES TEQIP |
| 37. | Double Beam UV Spectrophotometer | 985845.00 | M/S Lambda/WINLAB6 | COE ES TEQIP |
| 38. | Particle Size & Zeta Analyser | 2390000.00 | M/S Malvern Instruments Ltd/ZETASIZE NANO ZS90 | COE ES TEQIP |
| 39. | Fully automatic Autoclave | 153038.00 | M/S Equitron/ 7440SLEFA | COE ES TEQIP |
| 40. | Tissue Tearer | 174038.00 | M/S CAT & UNIDRIVE X 1000 | COE ES TEQIP |
| 41. | Accelerated Solvent Extractor | 2250000.00 | M/S Thermo Scientific / ASE 150 | COE ES TEQIP |
| 42. | Incubated & Refrigerated Shaker | 841575.00 | M/S Thermo Scientific /SHKE6000-8CE | COE ES TEQIP |
| 43. | Potentiostat /Galvanostat | 1435072.00 | M/S France /BIOLOGIC SP200 | COE ES TEQIP |
| 44. | Atomic Force Microscope | 4168500.00 | M/S Atomic Force Microscope / XE7 | COE ES TEQIP |
| 45. | X-Ray Diffractrometer | 4539150.00 | M/S Rigaku& MINI FLEX 600 | COE ES TEQIP |
| 46. | ELISA Reader | 130000.00 | M/S Trivitron Health Care & LDXR1 | COE ES TEQIP |
| 47. | Respirable Dust sampler (PM 10 (O2) | 100000.00 | M/S Envirotech& APM460L | COE ES TEQIP |
| 48. | Fine Particulate Sampler (PM 2.5) | 83700.00 | M/S Envirotech& APM 550 | COE ES TEQIP |
| 49. | Handy Sampler | 23000.00 | M/S Envirotech& APM821 | COE ES TEQIP |
| 50. | Stack Sampler | 67200.00 | M/S Envirotech& B2901A | COE ES TEQIP |
| 51. | Air Quality meter (O3) | 23817.00 | M/S AQM 01 | COE ES TEQIP |
| 52. | Automatic Organic Converter | 280000.00 | M/S NETAL(India) Ltd & BIOMALI 25S | COE ES TEQIP |
| 53. | Deep Freezer | 430000.00 | M/S Genist Technocracy/ VERTICAL | COE ES TEQIP |
| 54. | Spectrophotometer | 312900.00 | M/S Systronics/2201 | TEQIP II |
| 55. | Micro balance | 99750.00 | M/S Shimadzu & AUW -220D | TEQIP II |
| 56. | Arc GIS Software | 352080.00 | M/S AV-ESU427947013 | TEQIP II |
| 57. | TOC Analyser | 2231250.00 | M/S Shimadzu &TOC-LCPH | TEQIP II |
| 58. | FTIR | 1466053.00 | M/S Perkin Elmer / L160000E | TEQIP II |
| 59. | Electro Spinning Apparatus | 472500.00 | M/S Espin Nano | TEQIP III |
| 60. | Indoor Weather & Air Quality Monitor | 354754.00 | M/S Testo/440dp | TEQIP III |
| 61. | COD Digester | 260736.00 | M/S Merck & TR-420 | TEQIP III |
| 62. | Sound Level Meter | 244046.00 | M/S 3M & SE400 | TEQIP III |
| 63. | Fluidyn Software | 262500.00 | M/S Panache/ Fluidyn | TEQIP III |

**List of Projects completed in various Research laboratories**

|  |  |
| --- | --- |
| **Projects completed by 2015 Batch in the year 2019**  **Total No of Projects:18** | |
| **Construction Material Development Lab** | |
| 1. | Experimental investigations on strength of fly ash brick masonry wall. |
| 2. | Study on Flexural strength of self-curing concrete using recycled fine aggregate. |
| 3. | Experimental study on the strength of Geopolymer concrete with bamboo fibers |
| 4. | Experimental investigation on mix design of self-compacting concrete. |
| 5. | Strength and water sorptivity test on concrete with/without chemical admixtures. |
| 6. | Acceleration of chloride induced corrosion in reinforced concrete cylinders. |
| 7. | Infiltration rate and compressive strength of pervious concrete |
| **Structure Testing Lab** | |
| 1. | Seismic assessment and strengthening of existing apartment building at Coimbatore. |
| 2. | Seismic provision for suspended ceilings. |
| **Geotechnical Engg Lab** | |
| 1. | Structural evaluation of existing flexible pavements in GCT campus using Benkelman beam deflection method |
| 2. | GIS based spatial analysis of soil in Coimbatore region. |
| 3. | Effect of Foundry sand on rigid pavement. |
| 4. | Strength and consolidation characteristics of soft clay using prefabricated vertical drains, M-sand and Eco sand |
| 5. | Mitigation structures for sea water intrusion in Thamirabarani river, Tamilnadu, India |
| 6. | Behaviour of unconnected piled raft with varying cushion bed. |
| **Geo-Environmental Lab** | |
| 1. | Consolidation properties of soft clay stabilized with wood ash. |
| **Centre of Excellence for Environmental Studies** | |
| 1. | Design of anaerobic digester for biogas production in GCT campus. |
| 2. | Synthesis and characteristics of Fe3O4 Nano particles. |
| **Projects completed by 2016Batch in the year 2020**  **Total No of Projects:23** | |
| **Advanced Concrete Testing Lab** | |
| 1. | Mechanical properties and life cycle assessment of self-compacting concrete with replacement of M sand by eco sand |
| 2. | Experimental investigation on strength behaviour of concrete by using polypropylene fiber |
| 3. | Study on effects of corrosion inhibitor in the mechanical properties of Portland pozzolana cement concrete |
| 4. | Behaviour of Portland slag cement concrete incorporating corrosion inhibitor |
| 5. | Experimental study on self-compacting concrete using ground granulated blast furnace slag(GGBS) |
| 6. | Performance study on light weight aggregate concrete with polypropylene fiber using artificial neural network and environmental impact assessment |
| 7. | Study on concrete by partial replacement of cement with marble dust powder and coarse aggregate with coconut shell |
| 8. | Experimental study on interlocking concrete paver blocks using fly ash and coconut fiber |
| 9. | Performance study on self-curing concrete with recycled fine aggregate and Portland pozzolana cement |
| **Structure Testing Lab** | |
| 1. | Planning and scheduling of peb structure for a coil manufacturing unit |
| 2. | Study on the behaviour RC beams strengthen by using hybrid FRP laminates of varying widths |
| 3. | In place analysis of jacket offshore structure |
| 4. | Experimental investigation on properties of geo-polymer bricks |
| **Geotechnical Engg Lab** | |
| 1. | Consolidation properties of soft clay stabilized with industrial waste materials |
| 2. | Experimental study of unconnected piled raft with varying cushion bed under vertical and combined loading |
| **Geo-Environmental Lab** | |
| 1. | Effects of Biochar amendment on geotechnical properties of clay |
| 2. | Soil stabilization using Biochar and lime |
| **Centre of Excellence for Environmental Studies** | |
| 1. | Performance analysis of modified cellulose acetate membrane for the treatment of oily wastewater |
| 2. | Analysis of water quality index of ground water at GCT campus |
| 3. | Synthesis, characterisation and application of zinc sulphide-silver doped nano composite |
| 4. | Em fermented kitchen waste compost |
| 5. | Assessment of ground water quality for drinking purpose in Dharmapuri district, Tamilnadu |
| 6. | Assessments of Artificial groundwater recharge zones using Geographical Information System. |
| **Projects completed by 2017 Batch in the year 2021**  **Total No of Projects:16** | |
| **Advanced Concrete Testing Lab** | |
| 1. | Optimization Of Replacement of Fine Aggregates In Concrete With Recycled Fine Aggregate |
| 2. | Comparative Study On Mechanical And Durability Properties Of Basalt And Brass Coated Steel Fibre Reinforced Concrete |
| 3. | Experimental Investigation On Basalt Fibre Reinforced Self Compacting Concrete |
| 4. | Experimental Investigation On Fiber Reinforced Concrete Using Industrial By-Products |
| **Structure Testing Lab** | |
| 1. | Parametric Study Of Fixed Jacket Platform Of Windmill Under Varying Leg Configuration |
| **Geotechnical Engg Lab** | |
| 1. | Stability Analysis Of Railway Embankment In Thondaimanpatti Using Root Reinforced System |
| 2. | Effect Of Biochar And Steel Slag On Shear Strength Characteristics Of Low Compressible Soil |
| 3. | Vertical Load Carrying Capacity Of The Root Caisson Foundation Using Abaqus |
| 4. | Assessment Of Soil Properties From Coir Pith Waste Dump yard |
| 5. | Stabilisation Of Road Embankment By Using Polypropylene Fibre |
| **Geo-Environmental Lab** | |
| 1. | Effect Of Addition Of Nano Silica And Polypropylene Fiber On The CBR Value Of The Clay Soil |
| 2. | Experimental Study On Landfill Liners Using Black Cotton Soil Mixes |
| 3. | Stabilization Of Black Cotton Soil Using Phosphogypsum |
| **Centre of Excellence for Environmental Studies** | |
| 1. | Synthesis And Characterization Of Nanomaterial From Activated Carbon And Its Application In Removal Of Chromium |
| 2. | Assessment Of Groundwater Quality InSipcot Industrial Area, Perundurai, Tamilnadu |
| 3. | Design And Estimation Of Anaerobic Digester For Biogas Plant Using Food Waste At Gct Campus |