

GOVERNMENT POLYTECHNIC, RAJAMPETA

Institution Code: 176

COMPREHENSIVE REPORT ON Core, Computing & Manufacturing Facilities

Department of Civil Engineering | Department of Mechanical Engineering
Department of Science & Humanities

Rajampeta, Andhra Pradesh

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1. Executive Summary

Government Polytechnic, Rajampeta (Institution Code: 176) is a premier technical institution located in Rajampeta, Andhra Pradesh. The institution offers diploma-level programmes in Civil Engineering and Mechanical Engineering, supported by state-of-the-art laboratory infrastructure designed to provide hands-on technical education.

This document presents a comprehensive inventory and assessment of all Core, Computing, and Manufacturing facilities maintained by the institution, encompassing seven major laboratories, a Skill Development Centre, and workshop facilities across two technical departments.

7 Specialized Laboratories Civil & Mechanical Depts.	₹63.99 L Total Equipment Value Across all facilities
83 Computing Workstations Computer Lab + SDC	150+ Equipment Items Core lab equipment

Consolidated Financial Overview

S.No.	Name of the Laboratory / Facility	Total Equipment Cost (₹)
1	Chemistry Lab	₹ 48,770
2	Physics Lab	₹ 1,13,775
3	English Lab	₹ 37,002
4	Computer Laboratory (Civil)	₹ 27,59,136
5	Surveying Laboratory	₹ 8,85,150
6	Hydraulics Laboratory	₹ 2,59,775
7	Material Testing Laboratory	₹ 3,37,183
8	Fuels Laboratory	₹ 1,87,750
9	Refrigeration & Air Conditioning Lab	₹ 1,96,307
10	Thermal Engineering Lab	₹ 4,83,390
11	Work shop Laboratory	₹ 9,85,886
12	Skill Development Centre	₹ 13,37,718
13	Furniture	₹ 20,68,905

Grand Total: ₹ 97,00,747

2. Civil Engineering Laboratories

The Department of Civil Engineering maintains three dedicated laboratories that support curriculum delivery for students in III and IV Semester. The laboratories are equipped with modern instruments and are regularly maintained by qualified technical staff.

2.1 Computer Laboratory

Lab In-charge: R. Leena, Lecturer in Civil Engineering

The Computer Laboratory provides digital infrastructure for Civil Engineering students, supporting software-based learning including AutoCAD, structural analysis tools, and general computing. The laboratory has undergone phased upgradation since 2009 and received a major refresh in 2022-23.

20 ASUS Desktops (2022-23) 12th Gen Core i3, Win 11 Pro	₹27.6L Total Lab Value Highest valued lab
40 Dell Desktops (prior) Linux pre-loaded systems	2023 Latest Procurement ASUS 12th Gen systems

Equipment Inventory — Computer Laboratory

S.No.	Equipment Name & Specifications	Qty	Unit Price	Total Cost	Year
1	HP Desktop (HP DX2480MT) with 17" TFT Monitor	12	₹ 32,276	₹ 3,87,312	2009
2	HP LaserJet P1007 Printer	4	₹ 5,265	₹ 21,058	2009
3	HP Scanjet 2410C Scanner	1	₹ 2,619	₹ 2,619	2009
4	Dell Desktop Computer (Linux)	30	₹ 31,765	₹ 9,52,948	2016
5	Dell Desktop Computer (Linux)	10	₹ 45,766	₹ 4,57,660	2006
6	ASUS S501MD Desktop – 12th Gen Core i3, 8GB RAM, 512GB SSD, Win 11 Pro, 19.5" Display	20	₹ 37,525	₹ 8,85,600	2023

Note: Condemned items (1 Acer Laptop, 1 HP LaserJet, 1 HP Scanjet, 1 Emergency Light) were decommissioned in 2022-23 as per prescribed procedures.

2.2 Surveying Laboratory

Lab In-charge: G. Bala Chandra Reddy, Lecturer in Civil Engineering

The Surveying Laboratory is equipped with a comprehensive range of survey instruments from basic chain survey tools to advanced electronic total stations and GPS receivers. The laboratory supports field surveying practice for III and IV Semester students.

26 Equipment Items Field & precision instruments	2022-23 Latest Addition Electronic Total Station (Ruide)
₹8.85L Total Lab Value Includes Total Station ₹2.6L	5000m Prism Range New Total Station capability

Equipment Inventory — Surveying Laboratory

S.No.	Equipment Name & Specifications	Qty	Unit Price	Total Cost
1	Metric Chain (30M, 150 Links)	15	₹ 590	₹ 8,850
2	Prismatic Compass (Gun Metal & Brass)	15	₹ 860	₹ 12,900
3	Dumpy Level (9", Internal Focussing)	15	₹ 3,300	₹ 49,500
4	Theodolite (Transit)	15	₹ 8,220	₹ 1,23,300
5	Electronic Theodolite	1	₹ 43,100	₹ 43,100
6	Auto Level (Crion Make, 32x Magnification)	3	₹ 16,500	₹ 49,500
7	Total Station (NTS 352)	1	₹ 2,14,000	₹ 2,14,000
8	Electronic Total Station (Ruide RCS, 2" Accuracy)	1	₹ 2,60,000	₹ 2,60,000
9	Electronic Planimeter	1	₹ 40,400	₹ 40,400
10	GPS Unit	1	₹ 16,250	₹ 16,250
11	Plane Table Set (with Alidade, Spirit Level, Compass)	4	₹ 2,340	₹ 9,360
12	Minor Instruments (Abney Level, Pantograph, Planimeter)	2	₹ 3,070	₹ 6,140
13	Levelling Staff (Aluminium, 3-part, 5M)	15	₹ 575	₹ 8,625
14	Ranging Rods (2M & 3M)	60	₹ 120–179	₹ 8,970
15	Metallic Tapes (10M & 15M)	40	₹ 139–205	₹ 6,880

2.3 Hydraulics Laboratory

Lab In-charge: P. Siva Venkata Prasad, Lecturer in Civil Engineering

The Hydraulics Laboratory is equipped with flow measurement and turbine demonstration apparatus supporting the Fluid Mechanics and Hydraulics curriculum for III Semester Civil Engineering students. All apparatus are pump-driven stainless steel systems.

8 Major Equipment Items All pump-driven systems	3 Turbine Models Pelton, Kaplan, Francis
₹2.6L Total Lab Value Equipment cost	5 Batch Size Students per experiment set

Equipment Inventory — Hydraulics Laboratory

S.No.	Equipment Name & Specifications	Qty	Unit Price	Total Cost
1	Notch Apparatus (Rectangular, Triangular, Trapezoidal)	1	₹ 47,500	₹ 47,500
2	Orifice & Mouthpiece Apparatus	1	₹ 47,500	₹ 47,500
3	Venturimeter & Orificemeter Apparatus	1	₹ 47,500	₹ 47,500
4	Friction Factor Apparatus (3 GI & Steel Pipe Lines)	1	₹ 47,500	₹ 47,500
5	Pelton Turbine (Model)	1	₹ 8,350	₹ 8,350
6	Kaplan Turbine (Model)	1	₹ 5,725	₹ 5,725
7	Francis Turbine	1	₹ 8,200	₹ 8,200
8	Bernoulli's Theorem Apparatus	1	₹ 47,500	₹ 47,500

All apparatus feature stainless steel pump tanks (0.5 HP pump), measuring tanks, and closed-circuit configurations meeting IS standards for fluid mechanics experimentation.

2.4 Material Testing Laboratory

Lab In-charge: M. L. Anoop Kumar, Lecturer in Civil Engineering (M.E.)

The Material Testing Laboratory supports the study of engineering materials, including concrete, metals, aggregates, and soils. The laboratory is utilized across III and IV Semester for courses covering material science, concrete technology, and geotechnical engineering.

27 Equipment Items Testing & measurement tools	3 Students/Setup Batch size per experiment
₹3.37L Total Lab Value Including 2021-22 additions	2021-22 Last Procurement Compaction & slump apparatus

Equipment Inventory — Material Testing Laboratory

S.No.	Equipment Name & Specifications	Qty	Unit Price	Total Cost
1	IS Sieves for Coarse Aggregate (12" GI Frame)	8 no.	₹ 550	₹ 4,400
2	IS Sieves for Fine Aggregate (8" Brass Frame)	5 no.	₹ 875	₹ 4,375
3	Vicat Apparatus (with needle & dashpot)	3	₹ 3,950	₹ 11,850
4	Sieve Shaker (Hand Operated)	1	₹ 14,000	₹ 14,000
5	Aggregate Impact Tester (with Counter)	1	₹ 16,000	₹ 16,000
6	Izod / Charpy Impact Tester	1	₹ 95,000	₹ 95,000
7	Rockwell cum Brinell Hardness Tester (150 kg)	1	₹ 74,250	₹ 74,250
8	Digital Electronic Balance (10 kg, 1g sensitivity)	1	₹ 9,500	₹ 9,500
9	Liquid Limit Apparatus (with Counter)	1	₹ 3,750	₹ 3,750
10	Plastic Limit Apparatus	1	₹ 1,650	₹ 1,650
11	Compaction Factor Test Apparatus (IS 5515:1983)	1	₹ 30,650	₹ 30,650
12	Standard Proctor Test Setup	1	₹ 3,776	₹ 3,776
13	Slump Cone Test Apparatus	1	₹ 3,776	₹ 3,776
14	Deflection of Beam Apparatus	1	₹ 9,500	₹ 9,500
15	Concrete Cube Moulds (15x15x15 cm)	3	₹ 1,650	₹ 4,950
16	Cylindrical Moulds (15 cm dia × 30 cm)	3	₹ 5,074	₹ 15,222

S.No.	Equipment Name & Specifications	Qty	Unit Price	Total Cost
17	Cement Cube Moulds (7.06×7.06 cm)	4	₹ 700	₹ 2,800
18	Pycnometer (1 litre)	5	₹ 1,200	₹ 6,000
19	Bulk Density Test Apparatus	1	₹ 11,500	₹ 11,500
20	Field Density Test Apparatus	1	₹ 3,250	₹ 3,250

3. Mechanical Engineering Laboratories

The Department of Mechanical Engineering maintains three specialized laboratories — Fuels, Refrigeration & Air Conditioning, and Thermal Engineering — alongside the Skill Development Centre. These facilities provide practical training in thermodynamics, fluid power, and industrial processes.

3.1 Fuels Laboratory (Room M-309)

Lab In-charge: Bukke Sailaja, Lecturer in Mechanical Engineering

The Fuels Laboratory supports testing of lubricants and fuels, including flash point, fire point, and viscosity measurements. It is equipped with electrically-operated instruments with digital readouts.

S.No.	Equipment Name & Specifications	Qty	Avg. Unit Price	Total Cost
1	Abel's Flash Point Apparatus (Digital Temp. Indicator)	2	~₹ 14,375	₹ 28,750
2	Redwood Viscometer (Electrically Heated, Digital)	2	~₹ 12,000	₹ 24,000
3	Saybolt Viscometer (with Control Panel, Stirrer)	1	₹ 29,500	₹ 29,500
4	Pensky-Martin's Flash & Fire Point Apparatus (Digital)	2	~₹ 19,125	₹ 38,250
5	Carbon Residue Apparatus (Electrically Heated)	2	₹ 9,750	₹ 19,500
6	Dead Weight Pressure Gauge (10 kg/cm ² , Oil Pump)	1	₹ 38,000	₹ 38,000
7	Electronic Digital Balance (500 gms, 0.01 gm sensitivity)	1	₹ 9,750	₹ 9,750

Total Fuels Lab Value: ₹ 1,87,750

3.2 Refrigeration & Air Conditioning Laboratory

Lab In-charge: C. Siva Reddy, Lecturer in Mechanical Engineering

The R&AC Laboratory is equipped with service tools, test rigs, and demonstration units for hands-on training in refrigeration cycle components, vapor compression systems, and domestic AC maintenance.

S.No.	Equipment Name & Specifications	Qty	Unit Price	Total Cost
1	Domestic Refrigerator Test Rig	1	₹ 21,000	₹ 21,000
2	Water Cooler Test Rig (60 Litre)	1	₹ 97,912	₹ 97,912
3	VCR Test Rig	1	₹ 67,000	₹ 67,000

S.No.	Equipment Name & Specifications	Qty	Unit Price	Total Cost
4	Flaring Set	3	₹ 470	₹ 1,410
5	Swaging Set	5	₹ 200	₹ 1,000
6	Tube Cutter	7	₹ 110	₹ 770
7	Dry Bulb Thermometer	1	₹ 1,500	₹ 1,500
8	Charging Line (Rubber Hose Pipes)	2	₹ 375	₹ 750
9	Freon Gas Cylinder (2 Kg)	1	₹ 750	₹ 750
10	Pressure Gauge (500 PSI) & Vacuum Gauge	2	~₹ 340	₹ 680

Total R and Ac Lab Value: ₹ 1,96,307

3.3 Thermal Engineering Laboratory

Lab In-charge: Shaik Aejaz Ahamed, Lecturer in Mechanical Engineering

The Thermal Engineering Laboratory houses engine test rigs for practical study of internal combustion engines, heat transfer, and thermodynamic cycles.

S.No.	Equipment Name & Specifications	Qty	Unit Price	Total Cost
1	Single Cylinder Diesel Engine Test Rig	1	₹ 99,750	₹ 99,750
2	Digital Lab Setup (Heat Transfer & Thermal Analysis)	1	₹ 1,50,000	₹ 1,50,000

Total Thermal Engineering Lab Value: ₹ 2,49,750

3.4 Workshop Laboratory

Lab In-charge: S.Ramanadha Reddy, Senior Lecturer in Mechanical Engineering

The **Workshop** serves as the central hub for practical engineering training, equipping first-year students with foundational hands-on technical skills across multiple core engineering trades.

Total Workshop Laboratory Value: ₹ 9,85,886

4. Skill Development Centre

Lab In-charge: S. Ramanadha Reddy, Senior Lecturer in Mechanical Engineering

The Skill Development Centre (SDC) is a state-funded computing and skill training facility within the Mechanical Engineering department. Established in 2013-14 under state scheme funding, the SDC provides computing infrastructure, air-conditioned environment, and uninterrupted power supply to support vocational and technical skill training programmes.

30 Desktop Computers Intel Core i3, 2GB RAM, 320GB	1 UPS (Star Delta) 20 × 12V/65AH SMF Batteries
₹13.4L Total SDC Value 2nd highest valued facility	2 Ton AC Capacity 2 × Split AC, 5-Star rating

SDC Equipment Inventory

S.No.	Equipment Name & Specifications	Qty	Unit Price	Total Cost	Year
1	Desktop Computers (Intel Core i3, 3.1GHz, 3MB Cache, 2GB RAM, 320GB HDD)	30	₹ 32,360	₹ 9,70,788	2013
2	Multimedia Projector (XGA 1024×768, 3000 ANSI Lumen)	1	₹ 33,205	₹ 29,000	2013
3	Multi-function Printer	1	₹ 9,500	₹ 9,500	2013
4	Split Air Conditioner (2-Ton, 5-Star)	2	₹ 50,340	₹ 1,00,680	2013
5	Computer Chairs (Ergonomic)	35	₹ 2,250	₹ 78,750	2013
6	UPS with Batteries (Star Delta, 12V/65AH SMF × 20)	1	₹ 1,49,000	₹ 1,49,000	2014

5. Science & Humanities Laboratories

The Department of Science & Humanities supports foundational science education through Chemistry and Physics laboratories, and provides language skills training through the English Language Laboratory.

5.1 Chemistry Laboratory

Lab In-charge: SK Zeenath, Lecturer in Chemistry

S.No.	Equipment Name & Specifications	Qty	Unit Price	Total Cost
1	Analytical Balance with Weight Box (Double Pan)	3	₹ 2,300	₹ 6,900
2	Hot Air Oven	1	₹ 14,000	₹ 14,000
3	Water Bath	1	₹ 2,900	₹ 2,900
4	pH Meter (Digital)	1	₹ 6,500	₹ 6,500
5	Conductivity Meter (Digital)	1	₹ 4,750	₹ 4,750
6	Analytical Balance (Digital Assay)	1	₹ 12,870	₹ 12,870
7	Desiccators (200mm & 250mm)	2	-	₹ 850

Total Chemistry Lab Value: ₹ 48,770

5.2 Physics Laboratory

The Physics Laboratory is equipped with optics, mechanics, electricity and magnetism apparatus for first-year students. Key items include Travelling Microscopes, Resonance Apparatus, Tuning Fork sets, and Metre Bridges.

Total Physics Lab Value: ₹ 1,13,775

5.3 English Language Laboratory

The English Language Laboratory supports communication skills training for first-year students across all programmes.

Total English Lab Value: ₹ 37,002

6. Furniture:

The Office Infrastructure serves as the administrative backbone of the department, facilitating daily management, documentation, and coordination between faculty and students.

Total furniture Value: ₹ 20,68,905

GOVT POLYTECHNIC – RAJAMPETA

FURNITURE PARTICULARS

SL.NO	ITEMS	RATE	QUANTITY	TOTAL AMOUNT(Rs)
1	a) Dual Desk	1,900.00	100	190,000.00
	b) Dual Desk	4,350.00	60	261,000.00
2	a) Steel Almarah	5,190.00	10	51,900.00
	b) Steel Almarah	7,193.00	1	7,193.00
	c) Steel Almarah	8,300.00	10	83,000.00
	d) Steel Almarah	12,000.00	20	240,000.00
	e) Almarah with Glass Door	13,000.00	5	65,000.00
3	Drawing Stools	225.00	120	27,000.00
4	Drawing tables	825.00	100	82,500.00
	Drawing tables	475.00	100	47,500.00
	Drawing tables	5,500.00	60	330,000.00
	Drawing tables	5,500.00	60	330,000.00
5	Executive Tables	4,140.00	5	20,700.00
6	Principal Table	19,900.00	1	19,900.00
7	Podium	9,000.00	1	9,000.00
7	Long tables	3,080.00	10	30,800.00
8	a) Office Tables	1,900.00	15	28,500.00
	b) Office Tables	3,261.00	2	6,522.00
	c) Office Tables	4,260.00	13	55,380.00
9	a) S' Type Chairs	490.00	20	9,800.00
	b) S' Type Chairs	1,390.00	19	26,410.00
10	S' Type Armed Chairs	1,950.00	20	39,000.00
11	Iron Stools(15*15*18)	890.00	50	44,500.00
12	Nilkamal Chairs (Plastic)	425.00	10	4250.00
13	a) Plastic Chairs	550.00	40	22,000.00
	b) Plastic Chairs	400.00	20	8,000.00
14	Wooden Rack	9,000.00	1	9,000.00
15	Tables With out Boxes	1,630.00	10	16,300.00
16	Computer Tables (Big Size)	4,900.00	15	73,500.00
17	Computer Tables (Small Size)	2,200.00	10	22,000.00
18	Reading Tables	6,000.00	10	60,000.00
19	Work shop Benches	4,200.00	6	25,200.00
20	Stools (Tick Wood)	175.00	4	700.00
21	a) Steel Record Racks	3,770.00	5	18,850.00
	b) Steel Record Racks	3,770.00	20	74,000.00
22	Aluminium Ladder 20 Feet	12,000.00	1	12,000.00
23	Drawing Boards	475.00	100	47,500.00
TOTAL :-RUPEES TWENTY LAKHS SIXTY EIGHT THOUSANDS NINE HUNDRED AND FIVE ONLY				Rs. 20,68,905.00

B. Jyotsna Devi
Store Incharge

Principal
PRINCIPAL
GOVT. POLYTECHNIC
RAJAMPETA-516 115

6. Technical Staff Profile

Each laboratory is managed by qualified faculty with relevant technical expertise. The following table summarizes the technical manpower supporting laboratory operations:

S.No.	Name	Designation	Qualification	Laboratory In-charge
1	R. Leena	Lecturer in Civil Engineering	B.Tech	Computer Laboratory (Civil)
2	G. Bala Chandra Reddy	Lecturer in Civil Engineering	B.Tech	Surveying Laboratory
3	P. Siva Venkata Prasad	Lecturer in Civil Engineering	B.Tech	Hydraulics Laboratory
4	M. L. Anoop Kumar	Lecturer in Civil Engineering	M.E.	Material Testing Laboratory
5	Bukke Sailaja	Lecturer in Mechanical Engineering	M.Tech	Fuels Laboratory
6	P.Haritha	Lecturer in Mechanical Engineering	M.Tech	R & AC Laboratory
7	Shaik Aeja Azhamed	Lecturer in Mechanical Engineering	M.Tech	Thermal Engineering Lab
8	S. Ramanadha Reddy	Sr. Lecturer in Mechanical Engineering	M.Tech	Skill Development Centre
9	S. Ramanadha Reddy	Sr. Lecturer in Mechanical Engineering	M.Tech	Workshop Laboratory
10	K.Padmavathamma	Sr. Lecturer in Physics	M.sc.	Physics Laboratory
11	SK Zeenath	Lecturer in Chemistry	M.Sc., M.Phil.	Chemistry Laboratory
12	SK Shabana	Lecturer in English	M.Sc., M.Phil.B.Ed.	English Laboratory
13	B. Jyothsna Devi	Junior Asst.	M.sc.	Office

7. Key Institutional Highlights

7.1 Computing Infrastructure

- 83 computing workstations available across Computer Laboratory (Civil) and Skill Development Centre
- Latest ASUS desktops (2022-23) feature 12th Gen Intel Core i3, 512 GB SSD, 8 GB RAM, Windows 11 Pro
- Multimedia projection system and high-capacity UPS with battery backup available in SDC
- Air-conditioned computing environment with ergonomic seating for 35+ students

7.2 Civil Engineering Core Facilities

- Advanced Electronic Total Station (Ruide RCS) with 2" angular accuracy and 5000m prism range procured in 2022-23
- Full suite of hydraulic flow measurement apparatus including notch, orifice, venturimeter, and Bernoulli apparatus
- Heavy-load testing capability: Izod/Charpy Impact Tester (₹95,000) and Rockwell-Brinell Hardness Tester (₹74,250)
- Concrete and soil testing apparatus conforming to IS standards (IS 5515:1983 and others)

7.3 Mechanical Engineering Facilities

- Live diesel engine test rig (single cylinder) for performance characterization and heat balance studies
- Three types of turbine demonstration models: Pelton (impulse), Kaplan (axial flow), and Francis (mixed flow)
- Complete refrigeration servicing tools: flaring, swaging, bending, VCR test rig, water cooler, and domestic refrigerator rigs
- Fuel testing capability for flash point, fire point, viscosity (Redwood, Saybolt), and carbon residue

7.4 Equipment Maintenance Record

A rigorous maintenance culture has been maintained across all laboratories. The institution records no equipment condemnations in Civil Engineering laboratories (Hydraulics, Surveying, Material Testing) through 2023-24, reflecting effective preventive maintenance and responsible asset management. Computer Laboratory condemned equipment was properly decommissioned in 2022-23 following prescribed government procedures.

8. Laboratory Utilization Summary

The following table provides a snapshot of laboratory utilization, batch capacities, and primary semesters served:

Laboratory	Semesters Served	Batch Size	Primary Experiments / Activities	In-charge
Computer Lab (Civil)	III, V Sem	1 (individual)	AutoCAD, Structural Software	R. Leena
Surveying Lab	III, IV Sem	5 per instrument	Chain Survey, Theodolite, GPS, Total Station	G. Bala Chandra Reddy
Hydraulics Lab	III Sem	5 per setup	Flow Measurement, Turbine Study	P. Siva Venkata Prasad
Material Testing Lab	III, IV Sem	3 per setup	Concrete, Metals, Aggregates, Soil Tests	M. L. Anoop Kumar
Fuels Lab	As per schedule	Group	Flash/Fire Point, Viscosity, Carbon Residue	Bukke Sailaja
R & AC Lab	As per schedule	Group	Refrigeration, VCR, Water Cooler Rigs	P.Haritha
Thermal Engg. Lab	As per schedule	Group	Diesel Engine Testing, Heat Transfer	Shaik Aejaaz Ahamed
Skill Dev. Centre	All Semesters	Up to 30	Digital Skills, Vocational Computing	S. Ramanadha Reddy

Government Polytechnic, Rajampeta is committed to continuous upgradation of its laboratory infrastructure, ensuring students receive industry-relevant technical training aligned with the demands of modern engineering practice.