G.VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI

(Re-Accredited with 'A' Grade by NAAC)

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli),

DEPARTMENT OF CHEMISTRY
Policy document

1. Preamble

The Department of Chemistry strives to offer a well-rounded, quality education that develops students into competent professionals, ethical citizens, and lifelong learners. This policy document provides a strategic roadmap for curriculum planning, teaching-learning processes, assessment, quality assurance, and continuous improvement, in alignment with the department's vision and mission.

2. Vision Statement

To empower young learners with State-of-the-Art Chemistry Education and enable them to attain global standards so that they can contribute to national development as active researchers, academicians, industrialists, and entrepreneurs.

3. Mission Statement

- Developing basic knowledge in Chemistry by providing practical experience.
- Imparting knowledge for holistic development by including social orientation and ethics.
- Instilling scientific zeal, leadership skills and employable skills in students to meet contemporary challenges.
- Making the students self-reliant by starting their own business through in-plant trainings and mini projects.

4. Objectives of the Policy

- To implement and sustain **Outcome-Based Education (OBE)**.
- To design and deliver an industry-relevant and research-oriented curriculum.
- To foster a culture of **ethical practices**, **green chemistry**, and **sustainable development**.
- To enhance students' **research acumen**, **digital competency**, and **soft skills**.
- To promote **lifelong learning**, **interdisciplinary collaboration**, and **community outreach**.

5. Programme Outcomes (POs)

On successful completion of the programme, graduates will:

PO1: Understand and apply major chemical concepts across disciplines and meet industry/research needs.
PO2: Operate laboratory instruments, interpret experimental results, and improve processes based on evidence.
PO3: Employ scientific inquiry, logical reasoning, and critical thinking to solve chemical problems.
PO4: Demonstrate safe handling and disposal of chemicals with environmental and personal

safety considerations.
PO5: Follow ethical practices and promote green chemistry for sustainable development.
PO6: Exhibit proficiency in digital tools and pursue independent, lifelong learning.
PO7: Communicate effectively, work in teams, and demonstrate leadership and decision-making skills.

6. Programme Specific Outcomes (PSOs)

Students will be able to:

PSO1: Apply theoretical and practical Chemistry knowledge to solve real-world problems.
PSO2: Design and execute experiments using modern chemical instruments for industrial/research applications.
PSO3: Generate innovative research ideas and solutions through seminars, workshops, and project work..

7. Strategies for enhancing Teaching-Learning processes:

a) Curriculum Implementation Policy

- Follow the Choice Based Credit System(CBCS)
- Adopt curriculum aligned with Revised Bloom's Taxonomy and OBE framework.
- Courses mapped with POs and PSOs. Use curriculum mapping to check alignment of courses with programme outcomes.
- Offer Core Courses, Core Electives, Elective Generic Courses, Ability Enhancement Courses, Employability Enhancement Courses, Proficiency Enhancement Courses and Skill Enhancement Courses aligning with emerging trends.
- Incorporation of value-added courses / certificate programmes.
- Conduct bridge courses for freshers and remedial courses for slow learners.
- Offer courses such as green chemistry, nano chemistry , polymer chemistry, instrumentation etc. in line with current scientific trends.
- Emphasis on interdisciplinary learning, and project-based learning.

b) Teaching-Learning policy

- Ensure academic planning via semester-wise course plans.
- Promote active learning through group discussions, peer teaching, participative methods, flipped classrooms and experiential and inquiry based learning through hands on laboratory sessions, models, minor /major research projects, and industrial visits.
- Integration of ICT-enabled teaching through LMS, virtual labs, YouTube demonstrations, ppts.
- Periodic association meetings, seminars, workshops, and guest lectures by academic, industry experts and alumni interactions .

c) Assessment and Evaluation policy

- Conduct Continuous Internal Assessment (CIA) and End Semester Exams (ESE) for comprehensive evaluation.
- Conduct formative assessments: assignments, viva-voce, model exams, seminars.
- Use of rubrics-based assessment for assignments, presentations, projects, and lab performance.

- Collect structured feedback from students, alumni and faculty and use it for continuous curriculum improvement
- Question papers designed across all cognitive levels: K1–K5 (Revised Bloom's taxonomy).
- Maintain student attendance and academic performance records properly.

d) Laboratory and safety policy

- Ensure all lab sessions are conducted with utmost safety following MSDS and lab protocols.
- Maintain an updated inventory of chemicals and instruments.
- Conduct regular training on lab safety, waste disposal and emergency procedures.

e) Student Development and Support Policy

- Provide mentoring, counselling and grievance redressal support.
- Organise Career guidance, soft skills training, coaching for competitive exams and offer higher education guidance.
- Encourage participation in seminars, workshops, poster presentations, internships and research projects
- Encourage students to apply for minor research projects (funded by TNSCST, Seed money provided by the management for student research).
- Identify and support students through mentor-ward system and alumni network.

f) Research, Innovation, and Entrepreneurship policy

- Promote under graduate research through Mini-projects, Major Group projects, and internships which are integrated into the curriculum.
- MoUs with industries, local research institutions, for collaborative research, consultancy, and internships.
- Regular organization of guest lectures through Association meetings/ seminars/workshops.
- Encourage faculty and students to publish in quality journals and participate in conferences.
- Promotion of green chemistry innovations/solutions , low-cost experiments and sustainable product development .

g) Green Chemistry and Sustainability Policy

- Incorporate eco-friendly lab practices and green chemistry principles in experiments.
- Promote reuse/recycling of lab waste wherever feasible.
- Raise awareness on pollution control, water conservation, and chemical safety.
- Implement Green Campus Initiatives:
  Plastic-free guidelines
  Rainwater harvesting
  Waste segregation & composting.
  Energy conservation practices.

h) Faculty Development and Governance Policy

- Encourage faculty to pursue research, publish papers in quality journals, and attend orientation/ refresher courses/ FDPs / conferences /seminars /workshops and MOOCS.
- Encourage faculty to apply for minor/major research projects (funded by UGC,DST,CSIR,TNSCST,Seed money provided by the management for faculty research) and travel grants.
- Encourage faculty to undergo training in modern pedagogy, ICT Tools, Blooms taxonomy, OBE documentation, writing a scientific paper etc.
- Conduct regular department meetings.
- Ensure inclusive decision-making, transparency, and continuous improvement.

i) Quality Assurance Measures

- Policy implementation monitored through academic audits and performance indicators
- Students Resuls are analysed after every semester.
- Curriculum revision based on stakeholder feedback (students, alumni, industry).
- Faculty Development Programmes (FDPs) for academic enrichment.

8. Plans for skill development & employability of students

a) Domain/Technical Skills

- Training on modern instruments: UV-Visible spectrophotometer, Flame Photometer, Conductometer, Nephelometer, Potentiometer, pH meter, etc.
- Workshops on chemical databases, drug design and scientific writing tools.
- Value added courses in /polymer chemistry/green chemistry / food chemistry

b) Soft Skills and Professional Skills

- Conduct training in communication, quantitative aptitude, logical reasoning, team building, and workplace etiquette.
- Organize mock interviews, group discussions, and resume-writing workshops

c) Industry Exposure

- Industrial visits to match industry, RO water plant, fertilizer, nuclear fuel complexes and research laboratories.
- Short-term internships and training with local industries and research centres.
- Guest lectures from industry chemists, entrepreneurs, and alumni.

d) Entrepreneurship Development

- Promote entrepreneurial skills through workshops in chemical product design, soap/detergent formulation,
- Facilitate students to develop small-scale chemistry-based startups under ED Cell support.

9. Measures for inclusivity

- Equal opportunity for all students irrespective of socio-economic background.
- Provide Mentor–mentee system for academic and personal support.

10. Extension activities

- Organise Awareness rallies on Food safety, Adulteration, environmental protection, child safety
- Organize awareness programs on water quality, waste segregation, environmental protection, health & hygiene.
- Conduct community outreach activities through school science demonstrations and competitions

11. Best Practices of the Department

- Hands-on training for employability and entrepreneurship.
- Offer coaching for Competitive Exams.
- Digital resource bank for access to e-content and previous years' question banks.
- Community Outreach Programmes promoting environmental safety, sanitation, and awareness.
- Green Chemistry Practices in laboratory to minimize environmental impact.
- Industry linkage through MoUs and guest talks by chemical professionals.
- Motivate students to participate in All India Level competitions like BARC Essay Contest.

12. Short Term Goals

- Introduce certificate courses in Lab technician/ analytical techniques/ green chemistry.
- Upgrade laboratory safety equipment and SOP manuals.
- Sign MoUs with at least 2–3 industries/research institutes.
- Organize national-level seminars/workshops.
- Strengthen placement training and alumni networking.

13. Long-Term Goals

- Develop a research consultancy wing for water testing, soil analysis and material testing.
- Achieve 100% student participation in skill certification.
- Obtain additional recognitions: DBT-STAR, FIST or other departmental grants.
- Aim for increased research publications, patents, and innovation-driven entrepreneurship.

14. Policy Review and Updates

- This policy document shall be reviewed every **three years** or earlier if required by the department..
- Amendments will be made based on changes in **university regulations**, **educational reforms** and **feedback from stakeholders**.

15. Conclusion

This policy document serves as a guiding framework to uphold academic excellance, student

centered growth and societal commitment of the Department. The Department of Chemistry, through this policy, reaffirms its dedication to shaping well-rounded Chemistry graduates who are academically strong, ethically sound and globally competent.