

Madhav Institute of Technology & Science, Gwalior
(A Govt. Aided UGC Autonomous & NAAC accredited Institute Affiliated to RGPV, Bhopal)

Chemical Engineering

Program Outcomes (PO) Attainment, Gap Analysis & ATR for 2020 -21

		Direct Attainment	Indirect Attainment	Overall Attainment	Target	Gap	Action to be taken
PO1	Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.	2.70	1.97	2.56	2.5	-0.06	PO is achieved. Visit to core process Industries to boost the technical knowledge/skills. More focus on discussions related to approaching a problem, using foundational engineering knowledge for solving problem is included.
PO2	Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.	* 2.69	2.05	2.56	2.5	-0.06	PO is achieved. Students to be motivated to learn on their own & give presentations. Emphasis on solution of complex engineering problems of visiting industries
PO3	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	2.69	2.00	2.55	2.5	-0.05	PO is achieved. Students to be encouraged to include all standard parameters within the constraints of safety & sustainability, while designing a chemical process. Design products with special emphasis on environmental concerns
PO4	Use research-based knowledge and research methods	2.67	2.02	2.54	2.5	-0.04	PO is achieved. Technical events/workshops/STC's

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	including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.						/Online Courses to be utilized to impart more knowledge & research methods to formulate innovative solutions to complex Chemical Engineering Problems.
PO5	Create, select and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.	2.71	1.92	2.55	2.5	-0.04	PO is achieved. Labs to be modernized & developed to inculcate modern analytical & computational tools like TGA, FTIR, CHNS Analyser, FLUENT, MATLAB, ASPEN etc.
PO6	Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice..	2.76	1.94	2.59	2.5	-0.09	PO is achieved. Course delivery to be oriented towards the relevant practical applications of concepts. To understand the safety, environmental & Social aspects of process Industries & take up collaborative projects for their professional growth.
PO7	Understand the impact of professional engineering solutions in societal and environmental contexts, and demonstrate knowledge of, and need for sustainable development.	2.70	2.06	2.57	2.5	-0.07	PO is achieved. Projects addressing the global energy & environmental issues to be taken up by the students with a focus on consumption, utilization & proper management of energy. Students to be motivated to attend technical workshops related to environmental issues &

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							utilization of renewable energy resource
PO8	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	2.74	2.11	2.61	2.5	-0.11	PO is achieved. Motivational talks, cooperative lectures & programmes on mutual & ethical practices to be arranged in order to inculcate professional ethics & sense of honesty in students
PO9	Function effectively as an individual, and as a member or leader in diverse teams, and in multi-disciplinary settings.	2.71	2	2.58	2.5	-0.08	PO is achieved. Various programmes and counseling sessions to be organized to help the students to groom the skills like leadership, team work, coordination, commitment and being an effective team member.
PO10	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.	2.70	2.13	2.58	2.5	-0.08	PO is achieved. Group discussions, seminars, presentations and soft skills training programmes to be organized to enhance the aspects of communication/skills. Students to be motivated to take related Novel Engaging Courses to groom themselves.
PO11	Demonstrate knowledge and understanding of the engineering and management principles	2.72	2.06	2.59	2.5	-0.09	PO is achieved. Awareness to be generated in students regarding managerial principles and projects

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	and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.						through some core courses related to management, economics and organization of process industries. Industrial Internships to be encouraged
PO12	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	2.69	1.97	2.54	2.5	-0.04	PO is achieved. Use of ICT facilities like PPT's, live demonstrations, NPTEL lectures to be encouraged. Course delivery to be oriented towards linking the fundamental concepts to practical usage.
PSO1	Apply computational and simulation tools to design, solve & optimize chemical processes.	2.72	1.97	2.57	2.5	-0.07	PO is achieved. Lab to be developed equipped with software such as ANSYS, ASPEN, PRO2, etc
PSO2	Design unit operations & unit processes to solve engineering problems using basic principles and methods & exhibit proficiency in applying technology to industry, society & environmental concerns.	2.61	1.92	2.47	2.5	0.03	PO is not achieved. Course delivery to be focused on extension of concepts to real world applications. Students to be motivated to take design projects & internships.


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