

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal, MP)

CIVIL ENGINEERING DEPARTMENT

Table 1: Summary of Program Outcomes (2017 Admitted Batch)

POs Attainment (2017-2021 Batch)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
Direct PO Attainment	2.76	2.77	2.62	2.77	2.77	2.76	2.76	2.89	2.80	2.80	2.79	2.82	2.74	2.84
Indirect PO Attainment	2.10	2.31	2.28	2.37	2.16	2.29	2.23	2.35	2.21	2.24	2.17	2.48	2.27	2.42
Overall PO Attainment	2.63	2.68	2.55	2.69	2.65	2.67	2.66	2.78	2.68	2.69	2.67	2.75	2.65	2.75

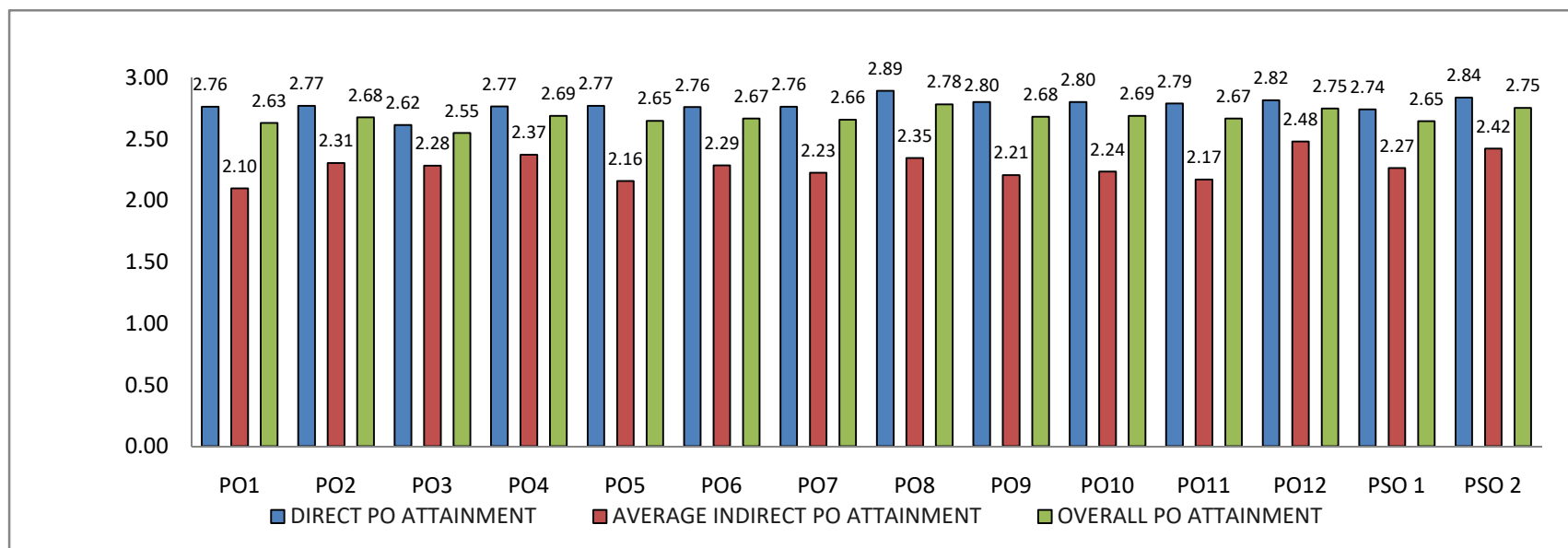


Fig.1: Bar Charts for PO ATTAINMENT (2017 Admitted Batch)

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Table 2: Assessment of Direct Program Outcomes (2017 Admitted Batch)

DIRECT PO ATTAINMENT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
110302: Building Planning & Design	2.80	2.80	2.78	2.82	2.78	2.82	2.82	2.77	2.78	2.77	2.80	2.80	2.80	2.80
110303: Building Materials & Construction	2.98	3.00	2.97	2.99	3.00	2.97	2.99	2.97	0.00	0.00	0.00	2.98	3.00	3.00
110304: Surveying	2.82	2.81	0.00	2.82	2.81	0.00	0.00	2.80	2.80	2.80	0.00	2.82	0.00	2.81
110305: Strength of Materials	2.87	2.85	2.83	2.87	2.86	2.86	2.80	3.00	0.00	0.00	0.00	2.88	0.00	2.86
110303 (P): Building Materials & Construction	2.98	2.98	3.00	2.96	2.96	2.96	2.98	2.96	2.96	2.96	0.00	2.96	2.98	2.97
110304 (P): Surveying	2.90	2.83	0.00	2.90	2.90	0.00	0.00	2.70	2.80	2.70	0.00	2.88	0.00	2.80
110305(P): Strength of Materials	2.68	2.68	2.60	2.68	2.68	2.68	2.68	2.68	2.68	2.68	0.00	2.68	2.68	2.68
110306: Software Lab	2.63	2.58	2.60	2.58	2.56	2.67	2.67	2.64	2.61	2.63	0.00	2.61	2.50	0.00
110307: Self Learning / Presentation	2.90	2.90	2.90	2.89	2.90	2.89	2.89	2.90	2.69	2.69	2.89	2.75	2.90	2.89
110308: Summer Internship Project - I	2.74	2.75	2.80	2.71	2.73	2.70	2.70	2.70	2.77	2.80	2.68	2.75	2.72	2.70
110402: Geotechnical Engineering – I	2.97	2.97	2.96	2.97	2.96	2.97	2.97	2.95	0.00	0.00	0.00	2.97	2.97	2.97

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110403: Fluid Mechanics – I	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	3.00	0.00	3.00
110404: Structural Analysis	3.00	3.00	3.00	3.00	3.00	3.00	2.99	3.00	0.00	0.00	0.00	0.00	3.00	0.00	3.00
110406: Water Resources Engineering	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	
110402 (P): Geotechnical Engineering – I	2.99	2.98	0.00	2.99	2.99	2.99	3.00	2.99	2.99	2.99	0.00	2.99	0.00	2.99	
110403 (P): Fluid Mechanics – I	2.52	2.52	2.52	2.52	2.52	2.52	0.00	2.52	2.52	2.52	0.00	2.52	0.00	2.52	
110407: Survey Practice Lab	2.95	2.95	2.96	2.95	2.95	2.96	0.00	2.95	2.96	2.96	0.00	2.96	0.00	2.96	
110501: Estimating Costing & Contracting	1.74	1.40	0.60	1.64	1.52	1.74	1.64	1.73	1.47	1.47	1.74	1.63	0.00	1.68	
110503: Fluid Mechanics – II	2.54	2.55	2.68	2.54	2.65	2.56	2.58	2.45	0.00	0.00	0.00	2.52	0.00	2.56	
110502: Structural Design & Drawing (R.C.C.)	1.96	1.96	1.92	1.96	1.94	1.96	1.79	1.92	1.89	1.89	0.00	1.95	1.96	1.94	
110509: Environmental Engineering	2.95	2.94	2.88	2.97	2.92	2.96	2.96	2.93	2.90	2.90	2.80	2.95	2.95	2.96	
110503: Fluid Mechanics – II (P)	2.80	2.80	2.80	2.80	2.80	2.80	2.80	0.00	2.80	2.80	0.00	2.80	0.00	2.80	

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110509: Environmental Engineering (P)	2.65	2.63	0.00	2.65	2.65	2.65	2.65	2.65	2.65	2.65	0.00	2.65	0.00	2.65
110505: Transportation Engineering	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
110505: Transportation Engineering (P)	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	0.00	3.00
110506: Minor Project – I	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
110507: Summer Internship Project - II	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.70	2.70	3.00	2.80	3.00	3.00
110508: Self Learning Presentation	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
110613: Construction Planning & Management	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00
110612: Solid Waste Management	2.87	2.99	1.49	2.88	2.99	2.85	2.87	2.70	2.97	2.97	2.88	2.88	2.21	2.87
110614: Railways, Airport & Tunnel Engineering	2.40	3.00	3.00	2.57	3.00	2.63	2.63	3.00	3.00	3.00	3.00	2.33	3.00	2.63
110602: Structural Design & Drawing (Steel)	2.19	2.19	2.18	2.19	2.16	2.19	2.18	2.18	2.14	2.14	0.00	2.18	2.19	2.18

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900213 - Urban Planning & Transportation Systems (OC - 3)	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
110701- Software Application for Solving Civil Engineering Problems	2.92	2.93	2.93	2.92	2.93	2.92	2.92	2.92	2.93	2.93	2.93	2.92	2.93	2.91
110702 - Summer Internship Project – III	2.88	2.88	2.86	2.92	2.90	2.92	2.94	2.92	2.93	2.92	2.95	2.91	2.89	2.91
110703 - Creative Problem Solving	2.95	2.98	2.93	2.94	2.97	2.98	2.98	2.95	2.95	2.93	3.00	2.95	3.00	3.00
100008: Intellectual Property rights (IPR)	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40

Table: 3 Assessments of Indirect Program Outcomes (20-21)

PO INDIRECT ATTAINMENT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
PO INDIRECT EXIT SURVEY	2.12	2.21	2.21	2.12	2.18	2.18	2.26	2.25	2.21	2.26	2.13	2.28	2.12	2.16
PO INDIRECT ALUMNI SURVEY	2.13	2.28	2.19	2.24	2.23	2.26	2.35	2.36	2.38	2.38	2.38	2.36	2.29	2.36
PO INDIRECT ALUMNI SURVEY	2.04	2.52	2.52	3	2.04	2.52	2.04	2.52	2.03	2.04	2.04	3	2.52	3

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AVERAGE INDIRECT PO ATTAINMENT	2.10	2.31	2.28	2.37	2.16	2.29	2.23	2.35	2.21	2.24	2.17	2.48	2.27	2.42
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Table: 4 Assessments of Overall Program Outcomes (2017 Admitted Batch)

Programme Outcomes (PO)	Direct PO Attainment Level	Indirect PO Attainment Level	Overall PO Attainment Level (80% of Direct Attainment + 20% of Indirect Attainment)	Target Attainment Level	Gap in Attainment	Status of PO Attainment	Action Taken
PO 1	2.76	2.10	2.63	2.5	-0.13	Attained	<ol style="list-style-type: none"> 1. Extra practice problems are to be given for courses like Strength of Materials, Fluid Mechanics, Surveying, Structural Analysis and solutions are discussed in the tutorial class. 2. Revision sessions are to be conducted of Engineering Mechanics prerequisite for the subject Strength of Materials. 3. Assignments based on Bernoulli's equation, Fluid Flow problems, Tacheometry, Theodolite traversing, Stress-Strain Analysis, Torsion etc. are to be given at second year level.
PO 2	2.77	2.31	2.68	2.5	-0.18	Attained	<ol style="list-style-type: none"> 1. Students are encouraged to observe their surroundings to gain insight into real life engineering problems and think of possible solutions for these problems. 2. Field/Technical visits are carried out so that

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							student can gain knowledge on complex engineering problems and their solutions. 3. Incorporating more numerical problems and conducting tutorials during regular lectures in courses like Surveying, Structural Analysis, Fluid Mechanics etc.
PO 3	2.62	2.28	2.55	2.5	-0.05	Attained	1. Design problems are given to students in tutorial classes of courses like R.C.C. design, Steel design, Hydraulic Structures, Highway Engineering. 2. Practical implementation of engineering systems was done through third year minor projects and final year B. Tech projects. 3. Projects are undertaken which are based on environmental and social needs.
PO 4	2.77	2.37	2.69	2.5	-0.19	Attained	1. For projects, students are asked to refer technical literature like Journal Papers, product catalogues and suggest solution by comparing various available techniques. 2. Students are encouraged to participate in national level conferences for paper presentations. 3. Workshops are conducted so that students gain knowledge on investigation of complex problems.
PO 5	2.77	2.16	2.65	2.5	-0.15	Attained	1. Students are asked to perform the experiments and projects using simulation software's like Virtual Lab, AutoCAD, STAAD Pro, MATLAB. 2. Industry experts are also invited to conduct the hands-on training on MATLAB, AutoCAD, STAAD-Pro. 3. The students get acquainted with modern tools which are added to the lab like Roadpod VT meter, Noise level meter, Total Station etc.

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PO 6	2.76	2.29	2.67	2.5	-0.17	Attained	<ol style="list-style-type: none">1. Industry visits are conducted to understand the various safety and legal issues and expand their practical knowledge.2. Students undertake major and minor projects based on safety issues.3. Information about safety facilities available in laboratories was given to students. Demonstration of safety equipments like fire extinguisher was given to understand personal and equipment safety
PO 7	2.76	2.23	2.66	2.5	-0.16	Attained	<ol style="list-style-type: none">1. Students gain knowledge in environmental and sustainable issues through Industry visits conducted to Water Treatment and Sewage Treatment Plants in the city.2. Students undertake major and minor projects based on environmental and sustainability issues.3. Students study various courses on Environmental Engineering like Water Supply, Waste Water, Waste Management.4. Institute runs a “Waste Management Club” and students are encouraged to participate in club activities.
PO 8	2.89	2.35	2.78	2.5	-0.28	Attained	<ol style="list-style-type: none">1. Courses like Human Values and Professional Ethics, and Professional Communication are included in the curriculum.2. Topics related to professional ethics are covered in course PMME.3. Students are motivated to write the project, seminar reports and lab write-ups in their own words avoiding “copy-paste” practices by using Turnitin software.4. Lectures/sessions/awareness programs are

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							conducted on career readiness by T&P cell.
PO 9	2.80	2.21	2.68	2.5	-0.18	Attained	<ol style="list-style-type: none">1. Students are encouraged to work in team during practical classes in course of Surveying.2. Students are encouraged to work in team during practicals like SPT test, Triaxial test, Plate load test etc.
PO 10	2.80	2.24	2.69	2.5	-0.19	Attained	<ol style="list-style-type: none">1. In-house Soft skill training is imparted to students after completion of Second Year.2. Department arrange Guest lectures for overall personality development of students.3. Extra sessions are conducted by the institute faculty under the subject of Professional Communications to improve communication skills of weak students.4. Technical and HR Mock orals are arranged for Final Year B.Tech students by T&P Cell.5. Students are asked to prepare report more critically after completion of B.Tech project, Internship and Seminars.
PO 11	2.79	2.17	2.67	2.5	-0.17	Attained	<ol style="list-style-type: none">1. The courses relevant to management principles need to be revised and regularly updated.2. Students are encouraged to undertake projects using principles of construction management.
PO 12	2.82	2.48	2.75	2.5	-0.25	Attained	<ol style="list-style-type: none">1. New experiments are designed based on latest trends.2. Lectures by industry experts are arranged to understand the current trends in industry.3. Curriculum is updated based on latest trends.
PSO 1	2.74	2.27	2.65	2.5	-0.15	Attained	<ol style="list-style-type: none">1. The assignments and tutorials are designed in such a way that students are able to practice the use of standard codes.

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							<ol style="list-style-type: none">2. A wide awareness of use of codes like IS, IRC, NBC, CPHEEO to the students are given.3. Students utilize the guidelines of IS codes, IRC, NBC, CPHEEO during B. Tech projects.
PSO 2	2.84	2.42	2.75	2.5	-0.42	Attained	<ol style="list-style-type: none">1. In the curriculum, multi decision criteria methods and determination of uncertainty are to be added.2. Students utilize the knowledge acquired during Internship in industry to critically analyse a problem and subsequently plan for solutions.3. Students are given insight in the critical issues which involve decision making through expert lectures from industry persons.