



Govindrao Wanjari College of Engineering & Technology, Nagpur

DVV-Criterion- 02

2.6

Students Performance and Learning Outcomes

2.6.2

Attainment of Programme outcomes and course outcomes are evaluated by the institution



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	2.6.2- Attainment of Programme outcomes and course outcomes are evaluated by the institution	
1	Description of the method of measuring the level of attainment of Pos, PSOs and Cos with maximum of 200 words.	2021-2022
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2.6.2- Attainment of Programme outcomes and course outcomes are evaluated by the institution.

1. Subject teacher maintains the evaluation data of Mid Semester Examination or Sessional Examination I and Sessional Examination II and Pre University Test, on regular basis and is used for assessing the learning outcomes.
2. Subject teacher maintains the evaluation data of assignments, subject seminars and project if any, on regular basis and is used for assessing the learning outcomes.
3. Student performance is evaluated on the basis of performance in academics, extra and co-curricular activities.
4. The University results are analyzed for student performance.
5. The Course End Survey Feedback for each subject is taken from students once in a semester which helps to verify the achievement of learning outcome.
6. The institute collects the data about learning outcomes from students, employers through course end survey feedback.
7. The feedback from parents is collected during parents–teachers meeting and considered for the improvement.
8. Student’s placement data is collected by the training & placement department. Data of graduates seeking higher education is collected by teachers and the training & placement department.
9. Participant’s feedback on guest lectures, trainings, workshops are collected by faculty in-charge.

Assessment –Assessment is one or more processes, carried out by the institution, that identify, collect, and prepare data to evaluate the achievement of programme outcomes. The program outcomes and program specific outcomes are assessed with the help of course outcomes of the relevant courses through direct and indirect methods. The institution assesses the students continuously with the application of following assessment tools, as they progress through the program.

Evaluation –Evaluation is one or more processes, done by the evaluation team, for interpreting the data and evidence accumulated through assessment practices. Evaluation determines the extent to which the all outcomes are being achieved, and results in decisions and actions to improve the programme.

Mapping –Mapping is the process of representing, preferably in matrix form, the correlation among the parameters. It may be done for one to many, many to one, and many to many parameters.

CO-PO-PSO Mapping Methodology–The process of attainment of COs, POs, and PSOs starts from writing appropriate COs for each course in the four-year engineering degree program. The course outcomes are written by the respective faculty member using action verbs of learning levels as suggested by Bloom’s Taxonomy. Bloom’s Taxonomy promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles, rather than just remembering facts (rote learning). It is most often used when designing educational, training, and learning processes. The three Domains of Learning are (1) Cognitive: Mental Skills (Knowledge), (2) Affective: growth in feelings or emotional areas (attitude or self) and (3) Psychomotor: manual or physical skills. Then, a correlation is established between COs, POs, and PSOs on the scale of 0 to 3. A mapping matrix of COs-POs -PSOs is prepared in this regard for all courses in the program. Course Outcomes and the CO-PO-PSO mapping matrix for a sample course are discussed below.

Direct Assessments are provided through direct examinations or observations of student knowledge or skills against measurable course outcomes. The knowledge and skills described by the course outcomes are mapped to specific problems on University Examination, internal exams and home assignment. Throughout the semester the faculty records the performance of each student on each course outcome.

Average attainment in direct method = University-Examination-(70%) + Internal Assessment (20%) + Assignment / Seminar /Viva / Project Work (10%)

Indirect Assessment is implemented by embedding them in Student Exit Survey, Employer Survey and Alumni Survey. Few of the POs are assessed based on relevant developed rubrics. Finally, program outcomes are assessed with above mentioned data and Program Assessment Committee concludes the PO attainment level.

Average attainment in indirect method = Average (Alumni survey + Employer survey + Exit survey)

The following scoring function is used to calculate the average attainment of each program outcomes.

PO /PSO Attainment (%) = (weightage: 80%) x (Average attainment in direct method) + (Weightage: 20%) x (Average attainment in indirect method)

Attainment level of POs, PSOs and COs

(Sample copy 2021-2022)

Department of Electrical Engineering

GOVINDRAO WANJARI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR
DEPARTMENT OF ELECTRICAL ENGINEERING

Internal Assessment Sheet

Program:- B.E. Electrical Engineering

Semester / Section :- VII Semester B.E.

Course / Course Code: CONTROL SYSTEM-II (BEELE701T)

C702.1	justify the practical system for the desire specification through classical and state variable approach.
C702.2	Construct the design of optimal control with and without constraints.
C702.3	Analyse non linear and work with digital system and there further research.
C702.4	Study idea about optimal and discrete time control system.
C702.5	Adapt the knowledge of classical controller or compensator.
C702.6	Have an idea about optimal and discrete time control system

Academic Year:- 2021-22

ASSESSMENT TOOL	DIRECT ASSESSMENT (WEIGHTAGE- 80 %)				INDIRECT ASSESSMENT (WEIGHTAGE- 20 %)	
	SESSIONAL I	SESSIONAL II	ATTENDANCE + (ASSIGNMENT/ SEMINAR/ G.D. /TECH QUIZ)	PUT	UNIVERSITY EXAM	COURSE EGT SURVEY
MAX MARKS	30 MARKS	30 MARKS	20 MARKS	80 MARKS	80 MARKS	20 MARKS
CO MAPPED	CO1, CO2	CO5, CO4	CO1, CO2, CO3, CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6
ROLL NO.	MARKS SCORED					
1	10	12	18	34	52	18
2	10	10	20	32	53	19
3	24	10	18	74	66	20
4	22	19	18	70	62	20
5	22	21	20	72	66	20
6	28	18	19	66	60	20
7	20	12	20	66	47	19
8	24	10	18	62	62	20
9	28	7	19	76	71	19
10	30	11	18	32	47	19
11	12	13	18	58	54	20
12	12	14	19	74	58	20
13	28	11	19	66	68	20
14	28	11	19	72	68	20
15	11	4	18	32	57	17
16	16	20	17	62	53	19
17	12	16	19	34	56	18
18	10	15	18	76	58	20

19	10	12	18	32	51	17
20	11	12	20	36	58	18
21	20	8	18	54	60	20
22	28	10	18	68	63	19
23	28	10	19	68	78	20
24	26	10	19	58	67	19
25	22	12	18	70	48	20
26	12	14	18	34	70	18
27	11	12	19	36	57	17
28	12	15	18	35	62	18
29	12	9	18	78	40	20
30	20	18	18	64	62	20
31	16	12	18	72	56	19
32	28	23	20	32	61	19
33	28	20	19	66	55	19
34	28	20	20	28	47	18
35	30	18	18	72	44	20
36	12	12	19	74	56	20
37	30	11	18	72	65	20
38	11	17	18	32	56	18
39	12	15	20	72	56	20
40	30	14	19	76	46	20
41	10	12	20	10	56	18
42	18	18	18	56	60	19
43	30	12	19	76	58	20
44	22	10	18	70	51	20
45	10	12	18	68	58	19
46	28	12	19	32	52	17
47	26	14	19	74	53	20
48	11	15	19	34	55	18
49	30	10	18	32	64	18
50	10	12	17	70	58	20
51	30	15	19	64	50	19
52	24	13	18	42	68	20
53	28	19	18	72	59	20
54	26	19	20	68	70	20
55	28	14	18	32	52	17
56	30	15	18	76	74	20
57	16	19	18	48	65	17
58	14	19	17	68	45	17
59	13	19	19	66	64	17
ABSOLUTE MARKS (40%)	12	12	8	32	32	8

TOTAL NO. OF STUDENTS APPEAR	59	59	59	58	59	59
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NO. OF STUDENTS SCORING ABOVE ABSOLUTE MARKS	48	45	35	56	59	59
% OF STUDENTS SCORING ABOVE ABSOLUTE MARKS	81.36	76.27	59.32	96.55	100.00	100.00
CO ATTAINMENT	3	3	3	3	3	3

Level L1 :	30	30% students scoring more than absolute marks	1
Level L2 :	40	40% students scoring more than absolute marks	2
Level L3 :	50	50% students scoring more than absolute marks	3

	SESSIONAL I	SESSIONAL II	ASSIGNMENT/SEMINAR/GR DUP DISCUSSION /TECH.	PUT	UNIVERSITY EXAM	COURSE EXIT SURVEY
Internal CO Attainment =	CO1,CO2	CO3,CO4	CO1, CO2, CO3,CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6
	3	3	3	3	3	3

CO Attainment

	CO1	CO2	CO3	CO4	CO5	CO6	
Internal CO Attainment	3.00	3.00	3.00	3.00	3	3	
University CO Attainment	3	3	3	3	3	3	
Actual CO Attainment = 60% UCOA + 40%ICOA	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Consolidated CO attainment of the subject						3.00	3.00
Final CO attainment of the subject					60% Direct Attainment + 40% Indirect Attainment		3.00

COs – POs – PSOs MAPPING FOR COURSE

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO9	PO10	PO11	PO12	PSO 1	PSO 2
	3	3	3	3	3	3	3	3	3	3	3	3	3
CO 1	2	2	2	1	2	1	1		1	1	1	2	2
CO 2	3	2	1	1	2	1	1		1	1	2	1	2
CO 3	2	3	2	2	1	1	1	1	1	1	2	2	2
CO 4	3	3	2	1	1	1	1	1	1	1	1	1	1
CO 5	2	2	2	1	1	1	1	1	1	1	1	1	1
CO 6	3	2	3	1	1	1	1	1	1	1	1	1	1
TOTAL	15	14	12	7	8	6	6	4	6	6	8	8	9
AVERAGE	2.50	2.33	2.00	1.17	1.33	1.00	1.00	0.67	1.00	1.00	1.33	1.33	1.50

POs – PSOs ATTAINMENT FOR COURSE

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO9	PO10	PO11	PO12	PSO 1	PSO 2
	3	3	3	3	3	3	3	3	3	3	3	3	3
CO 1	2.00	2.00	2.00	1.00	2.00	1.00	1.00		1.00	1.00	1.00	2.00	2.00
CO 2	3.00	2.00	1.00	1.00	2.00	1.00	1.00		1.00	1.00	2.00	1.00	2.00
CO 3	2.00	3.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
CO 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO 5	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CO 6	3.00	2.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL	12.00	11.00	10.00	6.00	7.00	5.00	5.00	3.00	5.00	5.00	7.00	7.00	8.00
AVERAGE	2.00	1.83	1.67	1.00	1.17	0.83	0.83	0.75	0.83	0.83	1.17	1.17	1.33

Attainment level of POs, PSOs and COs

(Sample copy 2021-2022)

Department of Electrical Engineering

Internal Assessment Sheet						
Program:- B.E. Mechanical Engineering						
Semester / Section :- VI Semester B.E.						
Course / Course Code: CONTROL SYSTEM ENGINEERING (BEME 602 T)						
The course will prepare student to						
C602.1	Study the Control System components and mathematical modeling of control system					
C602.2	Understand Transfer Function system Representation through Block Diagram and Signal Flow					
C602.3	Learn System Response & Time Domain Response Analysis.					
C602.4	Understand Control system analysis, root locus, concept and types of stability.					
C602.5	Study Frequency Domain analysis, Bode & Polar plot.					
C602.6	Understand State space presentation of Continuous Time systems.					
Academic Year:- 2021--2022						
DIRECT ASSESSMENT (WEIGHTAGE:- 80 %)						INDIRECT ASSESSMENT (WEIGHTAGE:- 20 %)
ASSESSMENT TOOL	20 MARKS (40 %)				80 MARKS (60 %)	COURSE EXIT SURVEY
	SESSIONAL I	SESSIONAL II	ATTENDANCE + (ASSIGNMENT)	P.U.T	UNIVERSITY EXAM	
MAX MARKS	30 MARKS	30 MARKS	20 MARKS	80 MARKS	80 MARKS	20 MARKS
CO MAPPED	CO1, CO2	CO3, CO4	CO1, CO2, CO3, CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6
ROLL NO.	MARKS SCORED					
1	10	10	17	39	55	17
2	12	17	18	32	43	18
3	11	16	19	21	61	14
4	23	14	17	21	58	12
5	13	21	18	38	67	12
6	14	15	19	21	59	10
7	15	20	20	46	63	8
8	12	15	17	31	54	20
9	17	13	19	19	60	10
10	22	19	18	24	68	17
11	15	11	19	23	0	8
12	17	19	17	24	70	10
13	9	14	19	24	45	6
14	25	26	18	52	65	20
15	17	16	18	24	60	19
16	15	14	17	29	78	11
17	21	17	19	45	58	20
18	17	19	20	38	56	7
19	24	15	18	31	54	17
20	15	17	18	49	69	20
21	14	19	17	49	68	22
22	17	13	19	37	68	18
23	11	17	18	31	62	12
24	13	14	17	60	65	18
25	28	21	19	39	64	16
26	19	21	18	29	62	18
27	20	15	20	31	48	17

28	34	17	18	33	54	18
29	19	15	17	27	0	13
30	15	14	17	21	50	14
31	10	11	18	30	44	17
32	17	15	19	21	84	15
33	17	19	18	21	70	17
34	14	19	19	24	73	14
35	15	11	18	38	75	18
36	12	10	19	32	81	18
37	13	16	20	35	61	17
38	13	12	18	21	0	7
39	14	15	17	34	53	6
40	21	22	18	30	61	13
41	20	24	18	27	50	12
42	23	25	19	29	45	14
43	11	11	18	32	0	12
44	13	17	19	35	61	18
45	25	23	19	39	64	16
46	20	21	18	31	55	18
47	17	17	20	33	53	17
48	17	19	18	31	43	18
49	18	19	18	27	41	17
50	19	11	19	36	45	8
51	17	19	17	28	53	10
52	11	14	19	AB	45	6
53	19	26	18	52	51	20
54	18	17	18	34	80	18
55	16	16	19	23	0	14
56	21	14	17	23	0	12
57	18	21	18	37	51	12
58	15	15	19	AB	0	10
59	14	11	18	31	53	12
60	18	17	19	34	58	18
61	27	21	19	41	51	16
62	21	21	18	31	47	18
63	22	15	20	30	41	17
64	18	17	18	32	49	18
65	25	19	18	27	66	17
66	19	11	19	35	68	8
67	16	19	17	22	0	10
68	13	14	19	27	60	6
69	27	26	18	31	65	20
70	15	17	18	33	0	18
71	13	16	19	22	47	14
72	22	21	18	30	0	18
ABSOLUTE MARKS (40%)	12	12	8	32	32	8

TOTAL NO. OF STUDENTS	72	72	42	70	72	72
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NO. OF STUDENTS SCORING	65	63	72	32	62	66
% OF STUDENTS SCORING ABOVE	90.28	87.50	171.43	45.71	86.11	91.87
CG	3	3	3	2	0	3

Level 1.1	30	30% students scoring more than absolute marks	1
Level 1.2	40	40% students scoring more than absolute marks	2
Level 1.3	50	50% students scoring more than absolute marks	3

Internal CO Attainment =	SESSIONAL I	SESSIONAL II	ASSIGNMENT/SEMINAR/GROUP	PJT	UNIVERSITY EXAM	COURSE EXIT SURVEY
	CO1,CO2	CO3,CO4	CO1, CO2, CO3,CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6	CO1, CO2, CO3, CO4, CO5, CO6
	3	3	3	2	0	3

CO Attainment						
	CO1	CO2	CO3	CO4	CO5	CO6
Internal CO Attainment	2.67	2.67	2.67	2.67	2.5	2.5
University CO Attainment	0	0	0	0	0	0
Actual CO Attainment = 50% LICCA + 40%ICCA	1.07	1.07	1.07	1.07	1.00	3.00
Consolidated CO attainment of the subject						1.04
Final CO attainment of the subject	80% Direct Attainment + 20% Indirect Attainment					1.44

COs - POs - PSOs MAPPING FOR COURSE															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO 1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO 2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO 3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO 4	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO 5	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
CO 6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
TOTAL	18	18	16	17	10	2	1		0	0	0	8	16	12	
AVERAGE	3.00	3.00	2.67	2.83	1.67	1.00	1.00	1.00				1.56	1.33	2.67	2.00

POs - PSOs ATTAINMENT FOR COURSE															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO 1	1.07	1.07	1.07	1.07	0.71	0.36		0.36			0.36	0.71	1.07	0.71	
CO 2	1.07	1.07	1.07	1.07	0.71			0.36			0.71	0.36	1.07	0.71	
CO 3	1.07	1.07	0.71	1.07	0.36						0.71	0.71	1.07	0.71	
CO 4	1.07	1.07	0.71	1.07	0.71	0.36	0.36				0.36	0.36	1.07	0.71	
CO 5	1.00	1.00	1.00	1.00	0.67						0.67	0.33	0.67	0.67	
CO 6	1.00	1.00	1.00	0.67	0.33						0.33	0.33	0.67	0.67	
TOTAL	6.27	6.27	5.56	5.93	3.49	0.71	0.36	0.71			3.13	2.80	5.60	4.18	
AVERAGE	1.04	1.04	0.93	0.99	0.58	0.36	0.36	0.36			0.52	0.47	0.93	0.70	