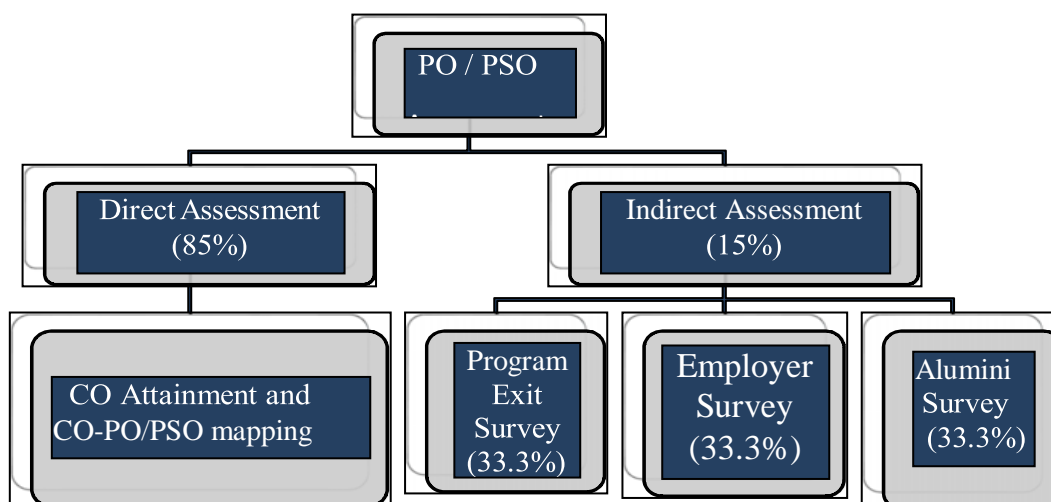# Rubrics developed to validate the PO, PSO

PO / PSO Assessment Rubrics

(i) Direct Assessment Tools and Process:

Introduction

Assessment is a mechanism for providing instructors with data for improving their teaching methods and for guiding and motivating students to be actively involved in their own learning. As such, assessment provides important feedback to both instructors and students. The techniques of outcomes assessment as a means of measuring student learning and the use of that information to improve teaching are considered first.

Set Benchmark Guidelines:
1. For all theory courses the benchmark will be 50%
2. For all Laboratory course the benchmark will be 80%
3. For all project courses the benchmark will be 90%

Set Target Guidelines:

Set target values is assigned by average value of Course outcome to programme outcome mapping,

PSO mapping (CO-PO mapping and CO-PSO mapping)

Sample: Formal language and Automate Theory – Course – Set target value is: 2.20

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C225.1	3	3	3	1									1	2	
C225.2	3	3	3	3									2	2	
C225.3	2	3	3	1									2	2	

Code																
C225.4	2	2	3	1									2	2		
C225.5	3	3	2	2									1	1		
	2.60	**2.80**	**2.80**	**1.60**									**1.60**	**1.80**		**2.20**

Assessment gives us essential information about what our students are learning and about the extent to which we are meeting our teaching goals. The following four tools are used to assess the Course outcomes

1. Internal Tests
2. Online Quiz & Assignments
3. University Results
4. Course Outcome Feedback

Sample internal test analysis: FLAT (II-II)

Code	Course outcome	CO attainment
C225.1	Classify machines by their power to recognize languages.	3
C225.2	Summarize language classes & grammars relationship among them with the help of Chomsky hierarchy	3
C225.3	Employ finite state machines to solve problems in computing	3
C225.4	Illustrate deterministic and non-deterministic machines	3
C225.5	Quote the hierarchy of problems arising in the computer science	3

1. Assessment Tool – Internal Test

As per the Curriculum of JNTU Kakinada, The student has to write two internal examinations per the Course. Each exam conducted for 30 Marks (R16) and 25 Marks (R19). First three Units in MID –I and last three units syllabus covered in MID-II (R16). First two and half Units in MID –I and last two and half units' syllabus covered in MID-II (R19). Faculty will set the Question paper accordingly. The marks obtained for each question and corresponding CO are collected from each student and then CO attainment is calculated.

The course outcomes are written by the respective faculty member using action verbs of learning levels. Then, a correlation is established between COs and POs in the scale of 1 to 3, 1 being the slight (low), 2 being moderate (medium) and 3 being substantial (high). A mapping matrix is prepared in this regard for every course in the program

In a university affiliated college, the CO attainment levels can be measured based on the results of the internal assessment and external examination conducted by the university. This is a form of direct

measurement of attainment. As per university regulations two internal assessment tests are conducted for each course in a semester. In each test, the percentage of students who achieve a set target (usually, 50% of the maximum marks) in each question calculated and that value decides the level of attainment of COs which correlated to that question.

Benchmark value is: 50%

Attainment Level 1: below 60% of students score more than 50% marks out of the maximum relevant marks.

Attainment Level 2: 60% to 80 % of students score more than 50% marks out of the maximum relevant marks.

Attainment Level 3: more than 80% of students score more than 50% marks out of the maximum relevant marks.

2. Assessment Tool – Online Quiz & Assignments:

As per the Curriculum of JNTU Kakinada, The student has to write two online quiz and assignments per the Course. Each exam conducted for 20 Marks (50% will be considered) and 10 Marks (50% will be considered). First three Units in MID –I and last three units syllabus covered in MID-II (R16). Faculty will set the Question paper for assignment's and online quiz is set by the JNTUK accordingly. The marks obtained for each question and corresponding CO are collected from each student and then CO attainment is calculated.

The course outcomes are written by the respective faculty member using action verbs of learning levels. Then, a correlation is established between COs and POs in the scale of 1 to 3, 1 being the slight (low), 2 being moderate (medium) and 3 being substantial (high). A mapping matrix is prepared in this regard for every course in the program

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Attainment Level 1: below 60% of students score more than 50% marks out of the maximum relevant marks.

Attainment Level 2: 60% to 80 % of students score more than 50% marks out of the maximum relevant marks.

Attainment Level 3: more than 80% of students score more than 50% marks out of the maximum relevant marks.

3. Assessment Tool - University Results:

At the end of the Semester University conducts examination for 70 marks (R16) and 75 marks (R19). The marks obtained for each student is calculated to measure the attainment. After the declaration of the university results, the percentage of students who attained the COs is computed. Here, it is assumed that the questions answered by a student cover all the course outcomes defined for that course. The percentage of students who achieve a set target (usually, 50% of the maximum marks,) calculated and that value decides the level of attainment of COs which correlated to that question.

Attainment Level 1: below 60% of students score more than 50% marks out of the maximum relevant marks.

Attainment Level 2: 60% to 80 % of students score more than 50% marks out of the maximum relevant marks.

Attainment Level 3: more than 80% of students score more than 50% marks out of the maximum relevant marks.

4. CO Feedback methodology

The true power of assessment comes in also using it to give feedback to our students. Improving the quality of learning in our courses involves not just determining to what extent students have mastered course content at the end of the course; improving the quality of learning also involves determining to what extent students are mastering content throughout the course.

At the end of the course, on line feed backs (The model CO feedback form is given in Annexure-I (Form 3)) are collected based on COs. Each CO is asked as question and that questionnaire has been send to Student. For example, if a course has six COs then six questions asked. The Student may grade Excellent, Very Good, Good, Satisfactory and Poor. Their weightage are as follows.

Feedback parameter	CO Attainment criteria	Level of attainment
Excellent, Very Good, Good, Satisfactory and Poor	Percentage Students >80%	Level 3
	60% to 80 % of students	Level 2
	below 60% of students	Level 1

5. PO attainment from Theory Course

The process of attainment of POs starts from writing appropriate COs for each course of the program. The course outcomes are written by the respective faculty member using action verbs of learning levels. Then, a correlation is established between COs and POs in the scale of 1 to 3, 1 being the slight (low), 2 being moderate (medium) and 3 being substantial (high). A mapping matrix is prepared in this regard for every course in the program

Overall Course Outcome Attainment

The overall CO attainment level in the course considered is then computed as

Overall CO attainment level =   15% of CO attainment level in Internal tests +

15% of CO attainment level in Online quiz and Assignment +

50% of CO attainment level in University test+

20% of CO attainment level in CO feed back

Overall CO attainment level = $(0.15*3+0.15*2+0.5*1+0.2*3)/3 = 1.85$

Weightage	Assessment Tool	Assessment Criteria	Data Collection	Faculty Responsible
Direct (85% weightage)	Internal Tests	% of students scored set Target Marks (50%) in Internal Exams	Once in a Semester	Course In Charge
	Online Quiz and Assignment	% of students scored set Target Marks (50%) in Online Quiz and Assignment	Once in a Semester	Course In Charge
	University Results	% of students scored set Target Marks (50%) in University Exams	Once in a Semester	Course In Charge
	Course Outcome Feedback	% of students gave feedback greater than Target value (50%)	Once in a Semester	Criteria 3 coordinator
Indirect (15% weightage)	**Surveys**	Program Exit Survey	Once a year	Feedback Coordinator
		Employer Survey	Once in two years	Placement Officer
		Alumni Survey	Once a year	Feedback Coordinator

The above procedure of computing overall CO attainment is to be repeated for each course from first year to final year in an academic year (including opted electives, project work and technical seminars in final year) in order to enable computation of PO and PSO attainment levels.

Program Outcomes (POs) are one step broader statements than COs that describe what students are expected to know and be able to do upon the graduation. These relate to the skills, knowledge, and behavior that students acquire in their matriculation through the program.

Program outcomes and 'program specific outcomes' are attained through the attainment of COs. This is called direct attainment of POs and PSOs. The overall CO attainment value as computed in chapter 4 and the CO-PO mapping values as computed in chapter 3 are used to compute the attainment of POs.

Sample computation of PO values:

Internal attainment value = (Corresponding cell value from CO-PO mapping table X

Overall CO attainment value for CO) = (3x2) = 6

Online Quiz and Assignment attainment value = (Corresponding cell value from CO-PO mapping table X

Overall CO attainment value for CO) = (3x2) =6

University attainment value = (Corresponding cell value from CO-PO mapping table X

Overall University attainment value for CO) = (3 x 1) = 3

Feed Back attainment value = (Corresponding cell value from CO-PO mapping table X

Overall Feedback attainment value for CO) = (3 x 3) = 9

Overall attainment vale = ((Internal attainment value * 0.15) + (Online Quiz and Assignment*0.15) (University attainment value*0.5) + (Feed Back attainment value*0.2))/3

Overall attainment of PO-1 = (0.15*3+0.15*2+0.5*1+0.2*3)/3=1.85

(ii) Indirect Assessment Tools and process:

Program Exit Survey:

An exit survey is conducted for students who have graduated out of the department for that year. The questionnaire format in the exit survey form to evaluate the attainment of POs and PSOs.

(a) Questionnaire Format

Facility	High	Moderate	Low
Library			
Laboratories in Curriculum			
Additional Laboratories & Project Lab			
Common Computer Center / Internet facilities			
Software facilities			
Sports & Games			
Counselling / Mentoring Facilities			
T & P Facilities			
Canteen			
Entrepreneurship cell			
Hostel			
Transport			
Self-Learning Facility such as NPTEL, e-Journals, JNTU			
Academic Performance			
Innovative methods in Teaching			
Student Seminars			
Faculty guidance in Laboratories			
Industrial visits / internships			
Quality of projects – Technology, Social Relevance, industry			
Annual SportsMeet			

Department Association Activities			
Cultural Activities (KITS YUVA)			
Support for self-learning			
Student peer learning opportunities			
Guidance provided by the Faculty members			
Training Courses beyond the University syllabus - Softskills			
Training Courses beyond the University syllabus - Technical			
Additional topics taught in the courses			
Additional Experiments in the Laboratories			
Quality of Exam paper evaluation			
Student feedbacks implementation			
Syllabus & its relevance to meet the objectives			
Annual Project Exhibition (KITS YUVA)			
Technical Paper presentation (KITS YUVA)			

(b)Relation of POs with questionnaire:

Facility	Mapping
Library	PO12
Laboratories in Curriculum	PO2,PO9,PO12
Additional Laboratories & Project Lab	PO2,PO9,PO12
Common Computer Center / Internet facilities	PO4,PO5,PO12
Software facilities	PO4,PO5
Sports & Games	PO8,PO9
Counselling / Mentoring Facilities	PO6,PO8
T & P Facilities	PO6,PO9,PO10,PO11,PO12
Canteen	PO7
Entrepreneurship cell	PO9,PO10,PO11,PO12
Hostel	PO7
Transport	PO7
Self-Learning Facility such as NPTEL, e-Journals, JNTU	ALL POs

Academic Performance	ALL POs
Innovative methods in Teaching	
Student Seminars	PO12,PO5
Faculty guidance in Laboratories	PO2,PO9,PO12
Industrial visits / internships	PO9,PO10,PO11
Quality of projects – Technology, Social Relevance, industry	PO6,PO7,PO8,PO9,PO11,PO12
Annual SportsMeet	PO8,PO9
Department Association Activities	PO9,PO12,PO5
Cultural Activities (KITS YUVA)	PO6,PO9
Support for self-learning	ALL POs
Student peer learning opportunities	ALL POs
Guidance provided by the Faculty members	PO12
Training Courses beyond the University syllabus - Soft skills	PO10,PO12
Training Courses beyond the University syllabus - Technical	PO10,PO12
Additional topics taught in the courses	PO5,PO12
Additional Experiments in the Laboratories	PO5,PO12
Quality of Exam paper evaluation	ALL POs
Student feedbacks implementation	ALL POs
Syllabus & its relevance to meet the objectives	ALL POs
Annual Project Exhibition (KITS YUVA)	PO9,PO11,PO12,PO5
Technical Paper presentation (KITS YUVA)	PO9,PO10,PO11,PO12,PO5

EMPLOYER SURVEY:

Feedback is taken at a frequency of once in two years from the employers who had given jobs to our graduates.

EMPLOYER's EXPERTS FEEDBACK FORM

As a part of evaluation about our Alumni working with your esteemed organization, we would like to take a few minutes to complete this brief questionnaire. Your participation is greatly appreciated.

1. **Industry Profile**

   ☐ Name of the Contact Person :

   ☐ Name of the Industry   :
   ☐ Type of Industry   :

   ☐ Address of Industry   :

   ☐ Mobile No.   :   Office No. :

   ☐ Email   :

   ☐ would you like to be a member of Board of Studies (BOS) of this College?

   Yes/ No

2. **Opinion about the existing curriculum based syllabus:**

5: Excellent ☐	4: Very Good ☐	3: Good ☐	2: Satisfactory ☐	1: Poor ☐

3. **Whether existing curriculum meets the modern technologies available in the Industries.**

5: Excellent ☐	4: Very Good ☐	3: Good ☐	2: Satisfactory ☐	1: Poor ☐

4. **Are you willing to visit KITS for Academic interactions? : Yes / No**

5. **Suggestions to improve Curriculum related to current Industry:**

………………………………………………………………….……………….……………

6. **Any other Suggestions:**

…………………………………………………………………………………………………

Signature

Sample Employers Feedback Analysis for the AY 2020-21

Opinion about the existing curriculum based syllabus	Whether existing curriculum meets the modern technologies available in the Industries
4	3
5	2
1	4
2	3
0	0

ALUMNI SURVEY:

Feedback is taken from alumni. The questionnaire format in the alumni survey form to evaluate attainment of POs and PSOs.

(a) Questionnaire Format:

Parameter Description	High	Moderate	Low
Academic Performance			
Innovative methods in Teaching			
Student Seminars			
Faculty guidance in Laboratories			
Industrial visits / internships			
Quality of projects – Technology, Social Relevance, industry			
Annual Sports Meet			
Department Association Activities			
Cultural Activities (KITS YUVA)			
Support for self-learning			
Student peer learning opportunities			
Guidance provided by the Faculty members			
Training Courses beyond the University syllabus – Soft skills			
Training Courses beyond the University syllabus - Technical			
Additional topics taught in the courses			
Additional Experiments in the Laboratories			
Quality of Exam paper evaluation			
Student feedbacks implementation			
Syllabus & its relevance to meet the objectives			
Annual Project Exhibition (KITS YUVA)			
Technical Paper presentation (KITS YUVA)			

(b) Relation of POs questionnaire:

Parameter Description	Mapping
Academic Performance	ALL POs
Innovative methods in Teaching	
Student Seminars	PO12,PO5
Faculty guidance in Laboratories	PO2,PO9,PO12
Industrial visits / internships	PO9,PO10,PO11
Quality of projects – Technology, Social Relevance, industry	PO6,PO7,PO8,PO9,PO11,PO12
Annual SportsMeet	PO8,PO9
Department Association Activities	PO9,PO12,PO5
Cultural Activities (KITS YUVA)	PO6,PO9

Support for self-learning	ALL POs
Student peer learning opportunities	ALL POs
Guidance provided by the Faculty members	PO12
Training Courses beyond the University syllabus - Softskills	PO10,PO12
Training Courses beyond the University syllabus - Technical	PO10,PO12
Additional topics taught in the courses	PO5,PO12
Additional Experiments in the Laboratories	PO5,PO12
Quality of Exam paper evaluation	ALL POs
Student feedbacks implementation	ALL POs
Syllabus & its relevance to meet the objectives	ALL POs
Annual Project Exhibition (KITS YUVA)	PO9,PO11,PO12,PO5
Technical Paper presentation (KITS YUVA)	PO9,PO10,PO11,PO12,PO5

Department of Computer Science and Engineering
(Accredited by NBA),
Guntur
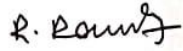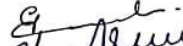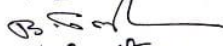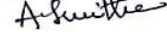
06-09-2021

Minutes of the Department Committee Meeting

The meeting is conducted on 06-09-2021 by 2.10 PMfor the Department Academic Committee. The following members were present in the meeting.

Venue: HoD Chamber.

Members Present:

1	Prof. R.RAMESH	HOD	*R. Ramesh*
2	Dr. M.S.S.Sai	Member	
3	Dr.G.Murali	Member	
4	Dr. CH.Aruna	Member	*Ch. Aruna*
5	Dr.S.V.Appaji	Member	*S.V. Appaji*
6	Dr B. Bhanu Prakash	Member	
8	A.Suneetha	Member	*A.Suneetha*
9	G. Dileep Kumar	Member	

The CSE HOD welcomed all the faculty members and expressed hope that the Vision and Mission of the department will be formulated. Thereafter, the agenda items were taken up for discussion.

Agenda:

1. Syllabus finalization/Elective Papers of II Year I & II Semester for the regulation R20.
2. Department Academic Calendar formation for the AY 2021-22.
3. Placement Analysis for the AY 2020-2021.
4. Training Sessions for the III B.Tech I Sem Students.
5. Skilled Oriented Programs for II BTech I Sem Students.
6. Discussion done on Curriculum Gaps for the Academic Year 2021-2022.
7. Discussion on CO-PO Mappings and Target Attainments for the Academic Year 2020-21 & 2021-22.
8. Analysis of II,III and IV First semester Results.
9. Discussion had done on Conduction of Online Classes/off line classes for the UG/PG Students in case of COVID cases increases.
10. Remedial Classes to be conducted for the students.
11. About the events to be conducted in the department for the students.
12. About the Research and development activities.
13. Quality of Student Projects/Internships
14. Online Certification Courses for the III,IV & II BTech Student in the AY 2021-2022.
15. Updating the NAAC and NBA Files.

Faculty coordinator

R. Ramesh
HOD

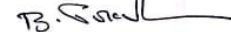## Department of Computer Science and Engineering
(Accredited by NBA),
Guntur

08-09-2021

Minutes of the Program Advisory Committee Meeting

The meeting is to formulate CSE Department was held on 08-09-2021 by 2.00PM in the Principal Chamber of the college. The following members were present in the meeting.

Members Present:

1.	Dr P Babu	Principal	
2.	Prof R Ramesh	Head	
3.	Dr MS Sai	Member	
4.	Dr Ch Aruna	Member	
5.	Dr G Murali	Member	
6.	Dr S V Appaji	Member	
7.	Dr B.Bhanu Prakash	Member	

The CSE HOD welcomed all the Program Advisory Committee members and expressed hope that the Vision and Mission of the department will be formulated. Thereafter, the agenda items were taken up for discussion.

Agenda:

1. Suggestions for the improvement of Department.
2. Department Academic Calendar formation for the AY 2021-22.
3. Placement Analysis for the AY 2020-2021.
4. Training Sessions for the III B.Tech I Sem Students.
5. Skilled Oriented Programs for II BTech I Sem Students.
6. Discussion done on Curriculum Gaps for the Academic Year 2021-2022.
7. Discussion on CO-PO Mappings and Target Attainments for the Academic Year 2020-21 & 2021-22.
8. Analysis of II, III and IV First semester Results.
9. Discussion had done on Conduction of Online Classes/off line classes for the UG/PG Students in case of COVID cases increases.
10. About the Research and development activities.
11. Online Certification Courses for the III, IV & II BTech Student in the AY 2021-2022.

Faculty coordinator

HOD