

INNOVATIVE TEACHING RUBRICS



**Department of Biotechnology
Ramaiah Institute of Technology
Bengaluru-560054**

Department of Biotechnology, RIT follows distinct rubrics for the evaluation of OBE based curriculum for the assessment of efficiency of teaching learning process. The rubrics used for the assessment of innovative teaching methodologies adopted to assess efficiency of student centric activities such as:

1. CIE (Continuous Internal Evaluation), SEE (Semester End Examination), assignments and quiz, etc.
2. Final year Project work
3. Mini project
4. Internship

1. CIE, SEE, Assignments, Quiz:

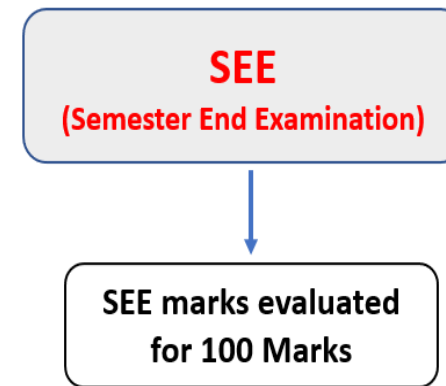
- The CIE & SEE question papers are designed to ensure that the student is tested for the different cognitive levels of learning.
- The CIE and SEE questionnaire patterns are framed in accordance with bloom taxonomy (**L1**: Remember, **L2**: Understanding, **L3**: apply, **L4**: analyse, **L5**: evaluate etc.).
- Each faculty adopt distinct rubrics for the evaluation of assignment/ other components shown as **Sample Screen Shot 1 & 2**
- The CIE & SEE are conducted at regular intervals for theory and practical during academic calendar with defined frequencies as shown in **Table No. 1. & Table No 2.**
- The eligibility criteria based on CIE performance to attain SEE exams are also defined as shown in **Fig. No. 1.,**
- The SEE exam results are announced based on their performance reflecting CIE and SEE performance (**Fig. No.1**).

Table 1 : Frequency of collection of CIE/ SEE component(s)

Assessment	Data Source	Frequency of Collection
<i>Direct Assessment</i>	Question papers of CIE tests	2 times during the semester
	Question papers of Semester end exam	Once, at the end of the semester
	Question papers of practical tests/ quizzes/tutorial tests	1-2 times during the semester
	Marks scored for each question by students in CIE tests	2 times during the semester
	Marks scored by students in the Practical tests / quizzes/tutorial tests	1-2 times during the semester
	Grades scored by students in semester end exam	Once, at the end of the semester
	Marks scored by students in the CIE evaluation of Project work/Mini project	2 times during the semester
	Grades scored by students in the SEE evaluation of Project work/Mini project	Once, at the end of the semester

Table 2: Rubrics for practical examination

CIE / Continuous Internal evaluation- 50M		External Evaluation / SEE-50M
Internal Practical test- 20M	Continuous assessment-30M	Major experiment
-	Performance in regular lab classes-10M	Minor experiment
	Record-15M	Spotter
	Observation book-5M	Viva



Grading	Marks range ≤
S	≥ 90
A	< 90 ≥ 80
B	< 80 ≥ 70
C	< 70 ≥ 60
D	< 60 ≥ 50
E	< 50 ≥ 40
F	< 40

Figure 1: Rubric adopted in defining eligibility criteria for the CIE and SEE exams.

Sample Screen Shot No.1.



**Department of Biotechnology,
Ramaiah Institute of Technology.**

Assignment report

Title of the Assignment topic:

Name of the Candidate :

USN :

Subject & code		
Rubrics for evaluation		
Submission	2 marks	
Contents	5 Marks	
Reference and citation	3 Marks	
Total Marks Obtained		

Signature of the student with date

Signature of the faculty with date

Sample Screen Shot No.2.

Rubrics for Evaluation of Forensic Science (BTE641) Assignment

Topic: "Forensic Case study"

Marks allotted: 10 marks

Instructions:

- should include more than two techniques or branches of forensic biology to solve a case in detail, no need to discuss theory
- Each student needs to submit individual reports on the respective forensic case study topic of their choice. (no group projects)
- Minimum no of pages is 6 sheets excluding cover page. There is no restriction for maximum no of pages.
- A neatly designed cover page with all necessary details should be included.
- Content carries 80 % of your marks and formatting carries 20 % of your marks .
- Retain Font size 12, Times new Roman for the main text. Apart from this, the document should be neatly formatted to match a technical report.
- Marks will be definitely deducted for late submission.

Deadline: Submit on or before 1.7.2022 (Friday) before 4 pm.

Rubrics for Evaluation

Information (Total 8 marks)	Marks
Collection of information	1
Compiling of information and its flow	1
Analysing the data	2
Interpretation of results	2
Writing Conclusion in your own words	1
No. of supporting documents pertaining the case study (Figures, Real time Pictures, Graphs)	1
Formatting (Total 2 marks)	
Appropriate font size and font style ; Line spacing and Line alignment	1
Design of cover page, Figure legends	1
Total	10

M. M. M. M.
Signature of the Course Faculty

2. EVALUATION OF PROJECT WORK:

- ***Evaluation of the project work through CIE:*** The evaluation of the project work for CIE is done in two phases (Phase I and Phase II) for cumulative 100 marks and scaled down to 60 marks. A 2- 3-member project evaluation committee, constituted in the department, evaluates all the projects. The remaining 40 marks is awarded by the respective internal guide. CIE marks are scaled down to 50, which comprises of marks awarded by internal guide and committee.
- ***Evaluation of the project work phase I:*** During the review of the phase I, students are required to give a presentation on problem definition, literature review and plan of work. Rubrics are as shown in **Table.No.3**
- ***Evaluation of project work phase II:*** Phase II of the review is conducted to evaluate the progress of the project work. Students are required to give a presentation on the methodology, results and discussion. Rubrics as shown in **Table No.4**
- ***Internal Guide Evaluation:*** Criteria for internal guide evaluation is as shown in **Table No. 5**
- The CIE evaluation sheet screen shot attached (**Screen shot No. 3**)
- ***Evaluation of the project work through SEE:*** The SEE component is based on the presentation, demonstration of the project and Viva voce conducted by the panel of external and internal examiners. The criteria for evaluation are decided by the respective panel as shown in **Table No. 6**. Generally, the examiners look for relevance of the project to the field of biotechnology, its real time application to food, health, environment and other allied fields. Students with publication in national/international journals or presentations in national/international conference/workshop are appreciated. Some common evaluation criteria taken into account by the panel of examiner are listed below:
 - Relevance of the topic
 - Systematic plan of work and execution
 - Data analysis and interpretation
 - Sound conclusion and future directions
 - Viva voce
 - Presentation skills
 - Report writing skills

Table 3: Phase I evaluation of Final Project work

Sl. No	Component and description	Evaluation criteria	Maximum Marks
1	Background and relevance of the selected topic	Well defined relevance of the topic to the field of biotechnology.	10
2	Objectives and problems identification	Clear and defined objectives addressing the research gap	5
3	Review of literature related to the research problem	Literature data justifying the suitability towards the defined objectives.	15
Total			30

Table 4: Phase II evaluation of Final Project work

Sl. No	Component and Description	Evaluation criteria	Maximum Marks
1	Methodology and implementation	Plan of work and technically sound implementation	15
2	Results presented	Comprehensive and synchronized presentation of results with qualitative and quantitative tools	15
3	Discussion and interpretation of the result	Synchronized and comprehensive interpretation of results with relevant literatures supporting the defined objective	30
4	Organization of report	Technical or grammatical errors, concise and precise complete documentation	10
Total			70

Table 5: Rubrics for Guides evaluation for Final year project

Sl. No	Component and Description	Evaluation Criteria	Max Marks
1	Importance/relevance/ originality of the research area	Well defined relevance of the topic to the field of biotechnology	5
2	Literature survey and plan of work	Plan of work and technically sound implementation	5
3	Implementation of experimental work	Comprehensive and synchronized presentation of results with qualitative and quantitative tools, interpretation of results with relevant literatures supporting the defined objective	15
4	Punctuality / regular updates	Timely completion of work & regular updates	5
5	Organization of report	Technical or grammatical errors, concise and precise complete documentation	10
Total			40

Table 6: Rubrics for evaluation of final year project

Assessment criteria	Level D	Level C	Level B	Level A
% Marks distribution	Up to 50	50-75	75-90	90-100
Importance /relevance of the research area	Has little idea of relevance to current technical and social scenario related to fields of biotechnology.	Has moderate relevance to current technical and social scenario related to fields of biotechnology.	Defined relevance to current technical and social scenario related to fields of biotechnology	Well defined relevance to the real time social scenario achieved with extensive technical/ interdisciplinary approaches of biotechnology.
Aim/objectives of the work	Minimal, vague and unclear objectives.	Moderately defined objectives	Clear and defined objective addressing the research gap.	Clear and well-defined objective addressing the research gap.
Literature survey	Minimal literature survey from general sources.	Moderate literature survey with minimal resources and relevance of the identified area.	Literature pertaining to research field justifying the suitability towards the defined objectives.	Extensive literature pertaining to research field justifying the suitability towards the defined objectives.
Methodology and implementation	Poor/minimal technical approach towards plan of work	Moderate plan of work and minor efforts in implementation.	Defined plan of work and technically sound implementation.	Well defined plan of work and technically sound implementation.
Results presented	Presentation of results with minimum qualitative – quantitative approach.	Moderate presentation of results with quantitative & qualitative approach.	Synchronized presentation of results with qualitative and quantitative tools.	Comprehensive and synchronized presentation of results with qualitative and quantitative tools
Discussion and interpretation of the results	Poor interpretation of results without relevant literature supporting the defined objective	Few errors in Interpretation of results with moderate literatures supporting the defined objective	Comprehensive Interpretation of results with relevant literatures supporting the defined objective	Synchronized & Comprehensive Interpretation of results with relevant literatures supporting the defined objective
Overall organization of the report	Poor clarity in technical content, grammatical errors lacks style and formatting is incomplete.	Reasonably good organization and lacks clarity in few topics, complete, few omissions, grammatically correct, lacks style	Sound organization, clear, very few errors, reasonably good style	Excellent organization, no technical or grammatical errors, concise and precise complete documentation.

Screen Shot No-3

Phase I evaluation sheet screen shot



Ramaiah Institute of Technology
Department of Biotechnology
BTP -Project Work phase I Evaluation
Term:

Group	USN	Name	Title	Background and relevance (10)	Objectives and problem identification (5)	Review of literature (15)	Total (30)

Phase II evaluation sheet screen shot



Ramaiah Institute of Technology
Department of Biotechnology
BTP -Project Work phase II Evaluation
Term:

Group	USN	Name	Title	Methodology and implementation (15)	Results presented (15)	Discussion and interpretation of the results (30)	Overall organization of report as per the guidelines (10)	Total (70)

Guides evaluation sheet



Ramaiah Institute of Technology
Department of Biotechnology
UG PROJECT WORK EVALUATION BY GUIDE

Course: Project work

Term: 23/03/22- 06/07/22

Course code: BTP

Project title:

USN	Name of student(s)	Importance/relevance/originality of the research area (5)	Literature survey and plan of work (5)	Implementation of experimental work (15)	Punctuality/regular updates (5)	Organization of report (10)	Total (40)

Name and Signature of Guide

3. MINI PROJECT

- The mini project introduced in the 6th semester is aimed to give an exposure or orientation to UG students on pre-requisite and basic strategy needed for the execution of final year project work.
- It motivates and encourages the students to work in teams of 3-4 students, in order to build mutual co-ordination and motivates the student to undertake projects in various biotechnology and related domains or interdisciplinary areas.
- Students are encouraged to extend the mini project work for their final year project.
- Students are evaluated based on the work progress shown, final presentation and deliverables submitted by the students in each semester.
- Mini project evaluation is executed in two phases and distinct rubrics are adopted towards evaluation by the project coordinators as shown in **Table No. 7 & 8** respectively.
- Students are notified 10 days in advance prior to phase I & II evaluations (**Screen Shot No-4**).
- Respective mini project guides are actively involved in the evaluation process as shown in **Table No. 9**.
- The final assessment of mini project(s) were performed by external examiner accompanied by internal examiner identified the department/ institution as shown in **Table No. 10**.

Table 7: Rubrics for mini project phase I evaluation

Sl No.	Component and Description	Evaluation criteria	Maximum Marks
1	Importance and relevance of the project	Basic aspects and Research information related with Mini project (5-6 slides)	10
2	Review of literature	Plan of work (Assays & Techniques)	10
3	Objectives	Significant results with analysis, Interpretation of results for supporting Objectives	05
4	Brief methodology	The contents & arrangement of PPT, Technical or grammatical errors precise complete documentation	05
Total			30

Table 8: Rubrics for mini project phase II evaluation

Sl No.	Component and Description	Evaluation criteria	Maximum Marks
1	Methodology	Plan of work (Assays & Techniques)	08
2	Results	Significant results with analysis	12
3	Discussion	Interpretation of results for supporting Objectives	05
4	Over all PPT presentation Organization of the report	The contents & arrangement of PPT, Technical or grammatical errors precise complete documentation	05
Total			30

Table 9: Rubrics for mini project guides evaluation

Sl. No	Component and Description	Evaluation Criteria	Maximum Marks
1	Importance/relevance/ originality of the research area	Well defined relevance of the topic to the field of biotechnology.	5
2	Literature survey and plan of work	Plan of work and technically sound implementation	5
3	Implementation of experimental work	Comprehensive and synchronized presentation of results with qualitative and quantitative tools, interpretation of results with relevant literatures supporting the defined objective	15
4	Punctuality / regular updates	Timely completion of work & regular updates	5
5	Organization of report	Technical or grammatical errors, concise and precise complete documentation	10
Total			40

Table 10: Rubrics for final Assessment of Mini project

Assessment criteria	Level D	Level C	Level B	Level A
% Marks distribution	40-55	55-75	75-90	90-100
Clarity & Importance /Purpose and relevance of the Mini project	Has little knowledge of related to current Basic, technical, and related to fields of biotechnology.	The Basics, technical skill and related to fields of biotechnology is average.	Proper relevance to current technical and significance related to fields of biotechnology	Excellent information for Basics and Applications relevance to the in need of society benefits related to biotechnology.
Objectives	Low level and unclear objectives.	Average defined objectives	Proper and defined objective addressing to the project problems	Excellent and well-defined objectives addressing to the research gap.
Review of Literature	Less number of literature survey from journals and websites	Average literature survey with less resources and relevance of the identified area.	Good justice for collection of research literature information to support the objectives.	Proper and Excellent information pertaining to research field justifying the project work for defined objectives.
Materials and Methods	Less/minimal technical approach towards Design of work	Average plan of work and minor efforts in implementation.	Proper design of experiment for technical analysis	A very good design of experimental work and contributes proper technical analysis
Results obtained/ presented	Results with minimum qualitative / Quantitative to fulfill Objectives.	Presentation of average results with quantitative & qualitative approach.	A very good presentation of results with qualitative and quantitative tools.	Overall, very good presentation of results with qualitative and quantitative tools
Discussion and Analysis of the results	Less interpretation of results without proper literature for the given objectives in project work	Interpretation of average results with less errors supporting the defined objectives	A very good justice and Interpretation of results with relevant literatures to full fill the objectives	Overall excellent Interpretation of results with relevant literature supporting the well-defined objectives
Overall organization of the Mini project report	Low clarity in technical content, English language mistakes, flow of the information and formatting is not proper	Overall good organization but lack of knowledge in few topics and flow of information, grammar mistakes	Overall, well organized report-- clear, crisp, proper justification and good flow of information.	Overall outstanding, well organized, not any type of mistakes, nicely compiled with flow of information and proper completed documentation.

SCREEN SHOT NO-4: Intimation by project co-ordinator for phase I & II evaluation



RAMAIAH
Institute of Technology

Department of
BIOTECHNOLOGY

04.05.2022

CIRCULAR FOR VI SEMESTER

Phase I evaluation of mini project (BT65) for BE 6th semester will be conducted on 19-05-2022, Thursday, 2:00 pm onwards and 20-06-2022, Friday, 10:00 am onwards, Venue- ESB-530 Class room. Students have to come up with a short presentation which includes:

- Title of the project work
- Name of the guide
- Brief Introduction
- Review of literature
- Objectives
- Brief methodology
- Expected results (If any)
- References (Uniform and standard format)

Rubrics for Mini project evaluation will be as follows:

Importance/relevance/originality of the mini project (10M)	Review of Literature (5M)	Aim/ Objectives of the work (5M)	Methodology in brief (5M)	Presentation (5M)
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Total Marks: 30

Time limit: 10 minutes followed by 2-3 mins for questions

No. of Slides: 10 -12

Note: Presentation will be in group, but assessment will be individual. Refer the list attached for the order of presentations. Each group has to submit an abstract (format enclosed) signed by all students and the guide on or before 10/05/2022

Students have to make their own arrangements for presentation.


Dr. Abhijith S.R.
Mini Project Coordinator


Dr. Roshni R
Mini Project Coordinator


Signature of HoD
Prof. & Head
Department of Biotechnology
Ramaiah Institute of Technology
MSR Nagar, MSRIT Post
Bengaluru-560 054



Date: 06.07.2022

CIRCULAR FOR VI SEMESTER STUDENTS

Phase II evaluation of UG Mini Project work BT65

The Phase-II evaluation of UG Mini Project work BT65 is scheduled on 15.07.2022 (Friday). During the review of phase II, each project group is required to give a power point presentation (15 minutes) on the methodology, results & discussion. Each group should submit draft copy (hard copy, print on both sides of the sheet) of the final project report. The criteria for evaluation are given below:

Evaluation of the project work phase II.

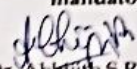
Sl. No	Component and Description	Evaluation criteria	Maximum Marks
1	Methodology and implementation	Plan of work and technically sound implementation	15
2	Results presented	Comprehensive and synchronized presentation of results with qualitative and quantitative tools	20
3	Discussion and interpretation of the result	Synchronized and comprehensive interpretation of results with relevant literatures supporting the defined objective	25
4	Organization of report	Concise and precise documentation without technical and grammatical errors	10
Total			70

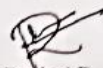
Presentation Schedule


Date	Time	Group No	Room No
15.07.2022 Friday	9:30 AM-12:30 PM	2, 4, 6, 8, 10, 12, 14, 16	ESB-530
	1:30 PM - 4:30 PM	1, 3, 5, 7, 9, 11, 13, 15	

Note:

- Presentation is group-wise and assessment is individual
- The presentation should be strictly as per the evaluation criteria and time limit is 15 minutes per group.
- All the groups are required to load the PPT at the beginning of the session and be present for the entire session.
- Submission of draft report with group members and internal guide signature is mandatory.


Dr. Abhijith S.R.
(Mini Project Coordinator)


Dr. Roshni R.
(Mini Project Coordinator)


Signature of HoD
Prof & Head
Department of Biotechnology,
Ramaiyah Institute of Technology
MSR Nagar, MSRIT Post
Bangalore-560 051

4. EVALUATION OF INTERNSHIP

A 4–6-week industry internship is a compulsory course requirement. Every student of the course is expected to work in the industry/Research Lab/premier academic institution for a period of six weeks, during the months of June to July. Based on the performance of the students in the internship, the marks will be awarded. Guidelines to be followed for Internship:

- The student should take prior permission from the department committee before carrying out the internship.
- The duration of the Internship is 4-6 weeks.
- The report of the Internship needs to be submitted to the department during the 7th semester.
- The department will constitute a committee for the evaluation of Internship of student. The evaluation committee evaluates the submitted internship reports on rubrics as shown in **Table. No. 11**
- The impact analysis of internship also performed shown as Screen shot No. 3
- At the end of the internship, students fill a feedback form, and their responses are collected in a scale of 5 to 1. 5 being the highest and 1 being the lowest (**Screen Shot No.5**).

Table No. 11: Rubrics for the internship (BTIN) evaluation.

Sl. No.	Assessment Parameter	Level of achievement			Total Marks
		Excellent	Good	Poor	
1.	Industry orientation	Demonstrate extensive knowledge of all the departments/sections, process, products and working environment (10)	Demonstrate moderate knowledge of all the departments/sections, processes, products and working environment (8)	Demonstrate minimally knowledge of all the departments/sections, processes, products and working environment (6)	10
2.	Domain knowledge and development of ideas	Thorough understanding and extensive explanation about the subject matter (10)	Moderate understanding and average explanation about the subject matter (8)	Minimal understanding and explanation about the subject matter (6)	10
3.	Team working skills	Positive interaction with all the group members and encouraging such interaction in others (10)	Spontaneous interaction with all the group members. (8)	Rare interaction with all group members (6)	10
4.	Task management	Very effective in managing the assigned task and trying to achieve all the goals (10)	Moderately effective in managing the assigned task and trying to achieve most of the goals (8)	Somewhat ineffective in managing the assigned task and is not trying much to achieve a few goals (6)	10
5.	Methodology of the proposed work	Clearly defined the steps followed in the production or process (25)	Moderately defined the steps followed in the production or process (20)	Poorly defined the steps followed in the production or process (15)	25
6.	Report	All the details are well documented and reported (10)	Some chapters are written clearly (8)	Not written well (6)	10
7.	Presentation	Information is presented with extensive knowledge and clarity (15)	Information is presented with acceptable knowledge and clarity (12)	Information is presented with minimal knowledge and clarity (9)	15
8.	Viva-voce	Answered all the questions (10)	Answered most of the questions (8)	Not answered well (6)	10
Total Evaluation Marks					100

**SCREEN SHOT NO-5: RATING SCALE FOR THE INTERNSHIP
FEEDBACK**

Number	Meaning	Explanation
5	Exceptional	Consistently exceeded expectations
4	Commendable	Sometimes exceeded expectations
3	Good	Met expectations
2	Uncomplimentary	Rarely met expectations
1	Unsatisfactory	Did not meet expectations