IQAC Manual 2022

Vision

''REVA University aspires to become an innovative university by developing excellent human resources with leadership qualities, ethical and moral values, research culture and innovative skills through higher education of global standards''.

Mission

- To create excellent infrastructure facilities and state-of-the-art laboratories and incubation centres.

- To provide student-centric learning environment through innovative pedagogy and education reforms.

- To encourage research and entrepreneurship through collaborations and extension activities.

- To promote industry-institute partnerships and share knowledge for innovation and development.

- To organize society development programs for knowledge enhancement in thrust areas.

- To enhance leadership qualities among the youth and enrich personality traits, promote patriotism and moral values.

Objectives

- Creation, preservation and dissemination of knowledge and attainment of excellence in different disciplines.

- Smooth transition from teacher - centric focus to learner - centric processes and activities.

- Performing all the functions of interest to its major constituents like faculty, staff, students and the society to reach leadership position.

- Developing a sense of ethics in the University and Community, making it conscious of its obligations to the society and the nation.

- Accepting the challenges of globalization to offer high quality education and other services in a competitive manner.

The Core Values and Purpose of REVA University is to:

- Attain excellence in different disciplines by creating, preserving and disseminating knowledge to all aspiring students.

- Draw inspiration from the University's ethos and develop within its members a sense of accountability towards their community, society and the nation at large.

- Accept the challenges globalization and changing times throw at us to offer high quality education and developmental services in a competitive manner.

- Provide every opportunity to the University's key constituents–its faculty, staff, students and the community–to excel in their domain of expertise and contribute to every task with sincerity.

- Transition from the teacher – centric focus to the learner - centric approach in imparting knowledge.

QUALITY POLICY

Aspire to provide education with excellence that will enable us advance to the frontiers of knowledge encompassing teaching, research, consultancy, and progressive education; while inculcating moral, ethical and social values to build a quality culture amongst all the stakeholders.

INTERNAL QUALITY ASSURANCE CELL

Vision

To provide and ensure a quality system and culture aimed at university to become excellence.

To ensure IQAC-REVA spearheads the University by developing systemic quality processes that would enable the University evolve as a University of Excellence in both academic and administrative practices.

Objectives

To develop a quality system for conscious, consistent and catalytic improvement in the overall performance of the Institution.

To channelize all efforts and measures of the Institution towards promoting its holistic academic excellence.

Introduction

The Quality Policy of REVA University is to achieve excellence in teaching, research, student support, extension and consultancy, with social relevance. The quality management system encompasses organizational structure, objectives and functions of IQAC. REVA University assures quality education and training in various programmes offered in different schools. Internal quality assurance systems in the institution are formulated on the basis of guidelines of external quality assurance agencies such as ISO, NAAC and UGC. Regular academic audits and the active functioning of IQAC during the last five years have greatly strengthened our quality management systems, resulting in achievement of academic objectives, and greater alignment with policies, procedures and systems prescribed by the external quality assurance agencies and regulatory authorities.

Internal Quality Assurance Cell (IQAC)

The IQAC of the University, established in 2015, has initiated many quality sustenance and enhancement measures during the last 5 years. The IQAC, succeeded in implementing the best practices in various programmes of the University. In the Quest for excellence the IQAC functions to assure its accountability to all the stakeholders, funding agencies and society as a whole.

Strategies

IQAC shall evolve mechanisms and procedures for:

- Ensuring timely, efficient and progressive performance of academic, administrative and financial tasks.

- The relevance and quality of academic and research programmes.

- Equitable access to and affordability of academic programmes for various sections of society.

- Optimization and integration of modern methods of teaching and learning.

- The credibility of evaluation procedures.

- Ensuring the adequacy, maintenance and functioning of the support structure and services.

- Research sharing and networking with other institutions in India and abroad.

Functions

Some of the functions expected of the IQAC are:

- Development and application of quality benchmarks/parameters for various academic and administrative activities of the institution.

- Facilitating the creation of a learner-centric environment conducive to quality education and faculty maturation to adopt the required knowledge and technology for participatory teaching and learning process.

- Arrangement for feedback response from students, parents and other stakeholders on quality-related institutional processes.

- Dissemination of information on various quality parameters of higher education.

- Organization of inter and intra institutional workshops, seminars on quality related themes and promotion of quality circles.

- Documentation of the various programmes/activities leading to quality improvement.

- Acting as a nodal agency of the Institution for coordinating quality-related activities, including adoption and dissemination of best practices.

- Development and maintenance of institutional database through MIS for the purpose of maintaining /enhancing the institutional quality.

- Development of Quality Culture in the institution.

- Preparation of the Annual Quality Assurance Report (AQAR) as per guidelines and parameters of NAAC, to be submitted to NAAC.

Registrar

Registrar
REVA University
Bengaluru - 560 064

Benefits

IQAC will facilitate / contribute:

- Ensure heightened level of clarity and focus in institutional functioning towards quality enhancement.
- Ensure internalization of the quality culture.
- Ensure enhancement and coordination among various activities of the institution and institutionalize all good practices.
- Provide a sound basis for decision-making to improve institutional functioning.
- Act as a dynamic system for quality changes in HEIs.
- Build an organised methodology of documentation and internal communication.

Plan of Action

- To conduct meeting with all the Directors and Coordinators at the beginning of each semester (Twice in a semester).
- To Review of academic policies for effective implementation.
- To introduce best quality practices and their implementation.
- To monitor the best practices and corrective measures whenever needed.
- To Coordinate in Feedback initiation, collection and analysis in every semester.
- To coordinate in collection of feedback on curriculum at the end of every year from outgoing students, faculty, alumni and employers.
- To organize Academic Activities as per the guidelines given by Governing Body, Academic Council of the college.
- To prepare common slots for seminars, sports, skill based program and Value added programs and communicate the same to the respective Department for inclusion in their timetable.
- To organize the review /audit of all the academic activities by a team of internal experts and present the observation in the meeting of GB/AC for further guidelines.
- To collect and compile the self-appraisal forms from faculty members at the end of academic year.
- To prepare/modify various application/information formats at least once in a year.
- To prepare the Activity calendar of the Institute based on the individual plans submitted by Schools.

Quality Parameters for Curriculum Design

1. Curriculum design is to be based on Outcome based education

2. The curriculum design and development process in general shall begin with:
    i) Need analysis report which comprises
        - Stated customer needs / needs of stake holders - employers
        - Implied needs
        - Overall goals of the University
        - Relevant standards i.e. AICTE and UGC guidelines
        - Curricula of Entrance Tests like Indian Engineering Services (IES) and Graduate Aptitude Test for Engineers (GATE), Indian Administrative Service (IAS) etc. and
        - General characteristics of target population.

        ii) Recommendations from/ consultation with alumni, industry experts, Entrepreneurs, Peers in the subject, etc.
        iii) Notes, recommendations, suggestions from the faculty member(s) teaching the course.
        iv) Interface between different Faculty members and external expert groups providing input to the instructional design.
        v) Success/failure reports of similar courses & programs;
        vi) Published literature relevant to programs;
        vii) Boundary conditions w.r.t curricula of GATE, IES, IAS and such other competitive examinations; and

3. For every program, the relevant Job Performance Requirement (JPR) has to be obtained from the Industries, R&D institutions, Higher Learning Institutes, and such other agencies, organizations providing job opportunities.

4. General Entry level knowledge/skills are to listed and minimum criteria for admission have to be laid down

5. Programme out comes are to be prepared keeping in view the job performance requirement already gathered.

6. Appropriate courses are to be identified and listed which enable the student to acquire the outcomes and the listed J.P.R.

7. The courses selected must have blended mix of Foundation Courses, Core Courses, Allied Courses, Courses providing general Proficiency skills and Job specific skills, and Advanced Courses, project work, and dissertation.

8. The delivery mode / teaching – learning - process (L:T:P) including internship, on the job training for each course has to be decided.

9. Based on the job requirement and the content, the delivery mode may comprise of all the above three components (L:T:P)or only lecture component (L) or only practice component (P) or combination of any two(LT; LP; PT).

10. Based on the above the scheme of instruction as per CBCS-CAGP shall be prepared.

11. While preparing the scheme of instruction, the courses are to be arranged into different semesters based on the logical sequence of KNOWN TO UNKNOWN.

12. Detailed syllabus for each course must be developed keeping in view the job requirement, present and near future developments in the field.

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13. The course content / detailed syllabus so developed shall be related to credits and teaching hours taking into account the contact hours available during the semester.
14. Before developing the course content, the course outcomes are to be prepared in line with the program outcomes.
15. Each Course selected must cater to at least 2 to 3 program outcomes.
16. Over all Blooms 'Level to be achieved in the program has to be decided based on the Programme outcomes.
17. The contents are to be designed based on the course outcome and the selected Bloom's level. The content also must be restricted based on the Course duration.
18. Once the whole curriculum is ready to be circulated among the experts from the Industry, Academia, Research Organizations, Alumni and a few selected senior students of the current running batch and elicit their feedback. Wherever possible try to accommodate or else take those suggestions and circulate those suggestions along with the Designed curriculum, Faculty Members, Course Completion Form of the previous semesters of all the courses (this will provide very useful inputs for the revision of the curriculum) to all the B.O.S. members well in advance (at least 2to 3weeks) to enable them to come prepared for the discussion in the meeting.
19. The BOS has to thoroughly discuss all the aspects of scheme of instruction and curriculum in detail and before according to approval, examine and confirm whether all aspects of Regulations of the university have been followed.
20. On approval from the BOS, place the same for the approval of the Academic Council.
21. Once the Academic Council approves the curriculum, it becomes approved document and shall not be changed till further amendment(s).

Quality Parameters for Academic Activities

01. Course Planning:

The academic calendar for semester shall be released by the Registrar at least one month before the starting of the semester as per the approved format.

A) Based on the scheme of instructions and curriculum provided by the University during 12the week after commencement of a given semester the Director/Head of the concerned School shall, notify the program(s) and courses being offered in the Forth coming semester and seek the choice(s) of course(s) the faculty members are interested to teach.

B) All the Faculty Members have to offer minimum of 5 choices of the courses in U.G.,3 in P.G.(preferably one in each programme) & 3 Laboratory Courses in order of preference based on their expertise, experience and interest, from among the list of courses provided by the Director/Head of concerned school and submit to the Director/Head of the School within 3 days after notification (**Annexure- 2).**

C) The Head of the School shall call for the meeting of all the faculty members and discuss various possibilities and finalize the course allotment process within **3 days** and issue the allotment letter (**Annexure - 3**) and the course file formats (**Annexure-4**) to all the faculty members considering the following points:

- As far as possible all faculty Members are allotted the courses of their choice. In case of any faculty member not in a position of being allotted of his/her choice on priority, the Director/Head of the School discuss the alternatives and resolves the issue of allocation of courses taking all the faculty members into confidence.

- Faculty Members are to be encouraged to offer the same courses at least for three to four times consecutively so that they gain expertise in that course.

- Avoid allotting some critical courses to the inexperienced faculty members.

- University Guidelines issued time to time shall be followed for the workload of various category faculty Members.

- A course coordinator shall be identified by the Head/Director for the common courses, and he/she shall be responsible for coordinating with all the faculty members who are offering same courses for planning, monitoring & Evaluation.

D) After the course allotment all the faculty members of similar expertise groups &the concerned Course coordinators shall meet with the Director to discuss and finalize the following within 3 days:

- The course out comes for all the courses in accordance with the program out comes.

- Blooms Taxonomy Level/Levels of delivery of the course.

- Various skill development trainings to be conducted for the students. (At least one training program per semester shall be conducted before starting of the course).

- Field visits to be arranged (at least two field visits per semester shall be conducted as per the guidelines furnished in the **Annexure-5**).

- Expert lectures to be arranged (at least one in each course shall be conducted during the semester).

- Additional topics to be discussed in each course apart from the approved course content.

- Laboratory experiment planning (As per the guidelines furnished in the **Annexure-6**).

- Project work planning (As per the guidelines furnished in the **Annexure-7**)

- Any training program / orientation required for the faculty members to effectively plan and deliver the allotted course.

- Any other matter related to the course planning / delivery / evaluation.

E) Immediately after the course allotment process is completed the Director/ Head shall initiate actions for the formation of the Timetable in consultation with the other Directors/ Heads under the supervision of the Senior Director and the same is to be completed **within 5 days of** course allotment as per the guidelines furnished in the (**Annexure-8**).and shall be displayed for students and Faculty members.

F) All the faculty members shall prepare the following Course planning documents in the prescribed format (**Annexure-4**)

- List of Course out comes

- Mapping of course outcomes &Programme outcomes

- Prerequisites for the Course

- Guidelines to Study the Course

- Select the blooms Taxonomy level of coverage of the course

- Additional topics/ field visits/ expert lectures planned

- Target set for the percentage of CO/ PO achievements

- Evaluation Plan

- Course Schedule which shall provide following:

    i) Total Number of Hours of Teaching

    ii) Proposed starting and ending dates of teaching of each unit

    iii) Dates of different assessment (Like IA1, IA2, Quiz, Surprise Test, assignments etc.) Including dates for makeup tests.

    iv) Details of Field Visits/ Expert Lectures Planned

    v) Details of Seminars/Presentations planned

 * Initially Schedule of Instruction for the First Unit only (later on for the subsequent units as the previous units comes to an end) which shall provide Split up of unit one into smaller topics for each class/classes with the overall unit out comes and the scheduled date of covering of each topic with the necessary references for each topic.

G) All the above course planning process shall be monitored by the following at all the levels for proper compliance and document:

- Respective Dean/Director of Faculty
- Senior Director
- DEAN –Internal Quality
- Vice Chancellor

02. Course Delivery

Though the course delivery is an individual style and methodology cannot be generalized, a few guidelines are provided. However, guidelines related to the documentation shall be strictly adhered to.

A) Faculty Members shall display/distribute the following documents from the course file on the first day of the course:

- Course content
- Course Timetable
- Course plan
- Course out comes
- Course schedule
- Schedule of instruction of Unit 1 (For subsequent units the Schedule of Instruction are distributed at the end of the previous unit).

B) Faculty Member shall explain the importance of the course its application and the expected learning outcomes of the students from the course in the first few classes.

C) Faculty Member shall be in the class venue at least 3 minutes before the scheduled time of the class.

D) Faculty Member shall always carry the Lesson Plan to the class. They shall not carry the textbook to the class unless it is very essential.

E) Course Delivery shall start with a review of the previous related topic and an introduction to the current topic. (Essentially it should take about 5 to 7 minutes).

F) Lesson outcomes shall be declared after the introduction.

G) Lecture shall be developed topic by topic as listed in the lesson plan and an appropriate explanation with necessary illustration using aids shall be given.

H) Provide a pause of 2 minutes between each topic and use this time to ask a few memory recall questions or provide some general information or engage them with some light activity.

I) Faculty shall maintain a two-way communication during delivery to draw the full attention of the student.

J) Faculty shall have the complete control on the class and shall see that all students are attentive, check the same through posing some abrupt questions.

K) Faculty shall follow some of these basic rule of pedagogy during course delivery:

- Teach from KNOWN TO UNKNOWN.
- Teach from CONCRETE TO ABSTRACT.
- Teach from SIMPLE TO COMPLEX.
- Teach from PARTICULAR TO GENERAL.
- Teach from OBSERVATION TO REASONING.
- Teach from WHOLE TO PART.
- Teach from SEEN TO UNSEEN.
- Explain the PURPOSE OF LEARNING before delivery.
- Focus on the WHOLE CLASS AND NOT ON FEW STUDENTS.
- Make LEARNING FUN RATHER THAN THE BURDEN / SERIOUS.
- Encourage students to ask questions at some appropriate time of the lecture / demo / experiment.
- During session hour ask students questions relating to topic being discussed, make them more attentive.
- Try to understand whether any student has not understood the delivery and give little more attention to such students.
- Declare the next class topic, references / sources of information and the expected out comes.
- The attendance of the class shall be taken either at the end or at the beginning of the lecture not in between and the names of the students shall be called not the roll numbers this will enable faculty to know the students better.
- At the end of the lecture, hand over the information sheet if any to the students.
- Do not dictate the notes in the class.
- Encourage group discussions:
- Before commencement of actual lecture appraise students about the importance of discipline, attendance, regularity in studies, patriotism, values and such others to motivate and bring students ready to involve themselves fully in learning process.

- Do not discuss during the class hours any personal issues/issues related with others or such issues not related to subject of study.

3. Course Monitoring:

Course monitoring shall be carried out basically to ascertain that the course is being conducted as per the course plan and enabling students to attain the declared course out comes and in turn help in achieving the program out comes. This monitoring is carried out by Faculty member himself/herself, Peers, Mentors, Head, Dean, Directors & the Vice Chancellor at appropriate intervals.

A) Faculty Member shall strictly adhere to the course plan approved by the Head and in case of any deviations envisaged during the course progress the same needs to be ratified by the Director/ Head and to be documented in the course plan document.

B) Generally, the faculty member shall not apply any kind of leave during the course period and in case of exigency appropriate alternative arrangements are to be made and get it approved by their Director / Head.

C) Head/Director or Senior Faculty Member in the department shall monitor the daily classes for its proper conduct at least 4 times in a day and any deviation is observed the same needs to be corrected and actions shall be taken to avoid its reoccurrence.

D) Director/Head shall meet the concerned faculty members at least once in a fortnight and monitor the progress through discussion and document verification. In case of any major deviation the same shall be corrected.

E) Faculty member shall take the feedback from the students at least twice in the semester apart from the course completion feedback and shall adapt changes in his/her delivery wherever essential and if required in consultation with the Director/Head and record the same in the course file.

F) Each class shall have quality circle consisting of the regular students in the class, all the faculty members teaching in that class and the Class Teacher. The Class Teacher (is one among the teachers teaching in that class)shall call for Quality Circle (QCM) Meeting at least once in a fortnight and discuss ways and means of better input, improving course delivery, value additions and such other issues that help to improve the quality of teaching and learning.

G) In case of any major concerns in the Q.C.M. the Director/Head shall have separate meetings with the faculty members, Dean- IQAC and find the way to resolve the issue for better quality output.

H) Teachers shall be given adequate opportunity to come out with newer ideas, tools &techniques that help better delivery of the course, quicker assimilation by the students and motivate them to be creative & analytical in their thinking/ learning process.

I) Students shall also be given adequate opportunity to come out with newer ideas and such other means that add to the quality of teaching-learning process.

J) Students attendance monitoring is the major process in the course monitoring and hence following guidelines shall be followed for the attendance monitoring and initiating corrective measures:

i) The entire faculty members shall take the attendance in every class/laboratory/project work/field visits/expert lectures/functions etc.

ii) If any student is found to be absent for three continuous days, the same shall be brought to the notice of the student's mentor and he / she in turn shall bring to the notice of the parents/guardians and interact with them and find ways of counselling student not to repeat the same in future. Also record the same in the mentor dairy.

iii) Once in a week all the mentors shall prepare the status of attendance and list of such students who are absentees and shall inform to the Director of the School.

iv) The Director shall bring this to the notice of the Head – Students' welfare for necessary interaction with the parents.

v) The faculty members shall display the monthly attendance details every month on or before 5th of the subsequent month. The class teacher is responsible in collecting &displaying the data.

vi) The Director of respective schools shall counsel the absentee students at regular interval so that they maintain requisite attendance.

vii) At the end of the semesters the Director's shall recommend the names of students with 100% attendance for reward. The Director shall send the monthly attendance report to the parents.

viii) The Head/Director shall recommend the names of such faculty members who have maximum attendance in the class on regular basis for reward.

4. Course Evaluation

The course evaluation shall have following two major components:

- Evaluation of the students for their achievement in course out comes and program out comes.
- Evaluation of faculty performance in achieving the set target of course out comes.

A) Students Achievements:

The student's achievements shall be measured by the faculty members through following modes:

i) Formal modes: continuous assessment through assignments, seminar presentations and such other assessment pattern at IA1, IA2 stages & through Semester End Exam.

ii) Informal modes: Surprise Tests, short notice tests, quiz, group discussions, daily class performance, regularity to the class and submission of assignments, evaluation from Industry experts/professional society members / mentors.

iii) At the end of the semester the faculty member shall submit the detailed evaluation of all the students to the Head for analysis and approval within 5 days of completion of the evaluation.

iv) The faculty shall maintain the transparency in assessment/evaluation and subject it to the scrutiny of the students before submission.

v) At each stage of assessment/evaluation, the mentor, class teacher, head of the school shall keep the parents/guardians informed about the performance of their wards and take them into confidence to join hands in taking any initiative for further improvement in their ward's performance.

vi) The faculty shall take the feedback from the students at the end of the course about the whole process of Teaching-Learning, student's ability to achieve the target.

B) Faculty Performance Evaluation

i) Faculty member himself / herself shall evaluate the self-performance through discussion with the students and based on their learning of the course.

ii) The Head/Director shall identify the peer's pair and such pairs shall sit through the others class at least Five times each in the semester and evaluate the faculty objectively & constructively.

iii) Faculty member shall discuss the findings of the peer with the Mentor / Head/Director / Dean / Dean-Academics as required.

iv) The Director/ Head shall evaluate the faculty member's performance through observing the course delivery and discussing with the student informally & through QCM.

v) At the end of the course comprehensive Feedback shall be obtained by such agency that are not involved in teaching-learning process and shall submit to the Head for further discussion with the faculty member.

vi) The Head shall carryout the final result analysis, CO's attainment, POs attainment at the end of the course.

vii) All the above listed components shall be comprehensively considered to evaluate the course.

5. Course Quality Enhancement

i) All the faculty members shall prepare a summary sheet as per the Performa (Annexure-10) within 05 days of the course completion on the whole process of course planning, delivery, monitoring and evaluation mentioning the positive points and the negative points and the measures to overcome negative points and enhance the quality of the course offered.

ii) The Head/Director shall call for the meeting of all the faculty members within 05 days after the receipt of the summary sheet and discuss comprehensively the measures to be taken to enhance the overall quality of the academic process in the school and submit recommendations to the Senior Director with a copy to the Director-Internal Quality. The Director, Internal Quality shall forward his remarks on the summary sheet to the Vice-Chancellor/ registrar.

iii) Senior Director shall compile all such recommendations and present the same to the Registrar/Vice Chancellor to initiate actions to place before the BOS/Academic Council as the case may be and communicate the specific directives to the schools for implementation in the future semester.

Academic Calendar Format

The academic calendar shall have the specific dates (period) for the following activities:

- ✓ Session Start

- ✓ Student Enrolment

- ✓ Skill Development Program

- ✓ Quality Circle Meeting

- ✓ Mid Term &Term End Exams/Result Declaration

- ✓ Mid Term result discussion

- ✓ Feedback to the Parents

- ✓ Students' Activities

- ✓ Quiz / Assignment Release &submission/discussion

- ✓ End of Teaching

- ✓ University Functions

- ✓ Total Instructional Days

- ✓ Official Holidays

Total Number of instructional days shall comply with the University/UGC/AICTE and other such norms.

Courses on Offer

FACULTY:	YEAR	PROGRAMME	SPECIALIZATION
SCHOOL	SEM	NAME OF THE FACULTY	EXPERIENCE

Sl. No	Choice of Course name (T/L)	Order of Pref	Code	Type	School	Faculty Justification
1						
2						
3						
4						
5						

Signature of the Faculty

Course Allotment Form

As per your choice and subsequent discussions in the Faculty Members meeting of the course allotment, you will be pleased to know that the following Course/Courses & Laboratory Sessions are allotted to you for the fourth coming semester.

Sl. No.	Course Name (T/L)	Course Code	Programme	School	Choice Opted
1					
2					
3					
4					
5					

The following documents are attached with this form for the effective course planning and Delivery. You may start preparing for the course and submit all the required documents for verification to the undersigned within **FIVE DAYS** of receipt of the Time Table for the course.

1) Authenticated copy of the course content (syllabus) &Approved Academic Calendar
2) Blank Course File Format
3) Attendance Register with the names of the registered students
4) Names of the faculty Members who shall associating in teaching &teacher evaluation process.

Wishing you a very happy and effective Course period.

To,

Mr./Mrs./Prof.   Head, School of ……….

Course File Format

Name of the faculty:	
E-mail:	
Program name:	Semester:
Course title:	Course code:
Office Hours:	Section:
Chamber Consultation Hours:	

The School Vision

The School Mission

Instruction Details

Course Duration13weeks: 52 sessions (Excluding IA exams and SEE)

Days	Time Table- Odd/Even Semester								
Mon			SHORT BREAK			LUNCH BREAK			
Tue									
Wed									
Thu									
Fri									
Sat									

Course Details:

Course description:

Guidelines for students to study this course:

Course content: (to be furnished unit wise for each course with weighting of marks)

Unit	Description	Evaluation Pattern	Topics	Contact Hours

a) Course Objectives:

The objectives of this course are to:

b) Course Outcomes:

After the completion of the course, the student will be able to:

CO#	Course Outcomes	PO's	PSOs
CO1			
CO2			
CO3			
CO4			
CO5			
CO6			

c) Program Outcomes

Engineering/Science/… Graduates will be able to:

PO1:

PO2:

PO3:

PO4:

PO5:

PO6:

PO7:

PO8:

PO9:

PO10:

PO11:

PO12:

d) Program Specific Outcomes
After the completion of the program, a successful student will be able to:

PSO1:

PSO2:

PSO3:

Mapping of Course Outcomes with program Outcomes

CO#/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2															
CO3															
CO4															
CO5															
CO6															

e) Pedagogy:

- Direct method
- ICT and Digital support
- Collaborative and Cooperative learning
- Differentiated Instruction
- Flipped Classroom

f) Suggested Text Books and References:

Text Books:

1.

2.

Reference Books:

1.

2.

Journals:

1.

2.

SWAYAM/NPTEL/MOOCs:

1.

2.

g) Assignment: (details of the assignment/s)

h) Prerequisites/Pre reading for the course:

i) Tentative dates for transaction of the curriculum:

S. N	Date Planned	Date Conducted	Unit/Chapter/Topics	Pedagogy	% of comple tion	Exten ded Activit ies
Unit I						
Unit-2						
Unit-3						
Unit-4						

3. Academic Integrity Policy:

Students are expected to follow the Rules of Conduct and Academic Behaviour standards as detailed in the Student Regulation handbook. Failure to comply with these rules may result in disciplinary actions as stipulated in the Students Regulations.

Note: Copying and plagiarism in any form for any of the evaluation components will result in zero marks.

4 Evaluation Scheme (As Per CBCS)

Continuous evaluation will be conducted as per the guidelines of the University. It is continuous and spread throughout the course; hence absenteeism from class may be detrimental to learning. The details of the evaluation components are given below:

Course Outcome Mapping with Evaluation:

Sl No	Evaluation Components	IA Marks	Weighting (%)	Date For Evaluation	Course Outcomes	Date of Completion of Evaluation
1						
2						
3						
4						
	Total					

7. Course Completion Summary: (to be filled in as and when the course progresses)

a. Completion Status

Unit No.	Planned Date	Completion Date	Remarks

b. Result Analysis: (to be filled in after the IA is conducted)

Exam	Total Strength appeared	No. of Students who scored				Pass %	Action taken for slow learners
		Absent	< 40%	40% to 70%	>70%		

c. Slow and Fast Learners in IA1

Sl. no	SRN	Name list	Remedial class dates			

Slow learners		Fast Learners	
No. of Students	Action Taken	No. of Students	Action Taken

d. Slow and Fast Learners in IA2

Sl. no	SRN	Name list	Pass/Fail

Slow learners		Fast Learners	
No. of Students	Action Taken	No. of Students	Action Taken

e. Assignment for Slow learners and fast learners

f. Remedial measures taken for slow learners and their progress report:

g. Slow learners performance in SEE

Faculty Course Assessment Report

I.   Course Assessment:

Course Outcomes	Tool/Task	% Score for selected program outcome					
		PO1	PO2	PO3	….	PSO1	PSO2 ….
CO1							
CO2							
CO3							
CO4							
Aggregate % score for each selected program outcome							
Outcome satisfied		Yes/No					

Note: %= Percentage of students who got 60% or more marks.

Minimum Level for PO attainment: 50%-60%

II. Comments

III. Overall Attainment

Course Outcomes Attainment			Program Outcomes Attainment			Program Specific Attainment		
	Internal	External		Internal	External		Internal	External
CO1 :			PO1:			PSO1:		
CO2 :			PO2:			PSO2:		
CO3 :			PO3:			PSO3:		
CO4:								
CO5:								
CO6:								

CO\PO	PO1	PO2	PO3	PO4	PO5	....	PSO1	PSO2	PSO3
CO1									
CO2									
CO3									
CO4									
CO5									
CO6									
Total									
80% of the total (Direct attainment)									
20% Feedback total (Indirect attainment)									
Grand Total (80%+20)									

Signature of the faculty   Director

Guidelines for conducting Field Visits

The purpose of organizing field visits to the students is to enhance their practical understanding of the subjects taught in the lecture/ laboratory. Following guidelines shall be followed for planning, executing &reporting of any Field visit:

1. Faculty member/Group of faculty members in the respective schools shall identify and list the various field visits to be organized for the fourth coming semester and the same shall be approved by the respective Director/Head at the course planning stage.

2. The concerned faculty member shall obtain well in advance the necessary permission from the concerned authority for the visit dates/ time, list of students attending & the faculty members associating with the students.

3. The faculty who is planning the visit shall visit the site with the group of faculty members prior to the students visit to acquaint himself/herself about the nature of the site, functioning, relevance of the site for the students perusing the specific course/programme and important things to be shown & to be explained to the student.

4. After this initial visit the faculty member shall prepare a short write up consisting of the following:
   - The name of the site to be visited
   - The objectives of the proposed visit
   - The primary functions to be carried out in the site
   - Salient points to be observed/ discussed with the field staff by the students.
   - The scheduled date of visit and the scheduled date of submission of the field visit report by the students and the evaluation scheme for the report.

5. The faculty member shall plan for the logistic support required for the visit well in advance and arrange the same.

6. Apart from mentioning the date of scheduled visit in the course schedule &Schedule of instruction the faculty member shall announce the date of the visit at least 3days in advance and display the write up prepared at step 4.

7. On the day of visit brief the students about the purpose of visit, the salient points to be observed in the visit and important questions to be asked during the visit.

8. During the visit the faculty member shall explain the main purpose of the visit to the concerned official from the organization and shall request him/her to focus on the relevant part during the explanation.

9. The visit shall be planned in groups so that there shall not be a big group

10. Encourage students to maintain a dairy and take a note in the field visit in the dairy which shall be useful in preparing the field visit report.

11. The students shall be informed to submit the report of the field visit Within 5 days of the visit and the same shall be evaluated by the faculty Member.

Guidelines for Planning and Execution of Laboratory Sessions

In Engineering and Science programmes the laboratory component plays a vital role in skill transfer to the students and hence a detailed and systematic planning &execution is a major task. Therefore, following General guidelines shall be followed:

1. The Director/Head with all the faculty members of the school shall discuss and set the laboratory outcomes and inspect all the laboratory for its adequacy & proper functioning within 3days of course allotment

2. All the Faculty members have to map the laboratory outcome with the Programme outcome, design the list of laboratory experiment (Multiple Challenge experiments) as per the approved course content (Syllabus) and submit the laboratory requirement to the Director/Head within 3days of course allotment.

3. Concerned Faculty Member/Members shall perform all the experiments listed and record the standard results to be used by the students for comparison within 7days of course allotment.

4. Faculty members shall prepare/revise the laboratory manuals and arrange for its printing well in advance. The manuals shall be be ready for distribution among the students as soon as the classes begin.

5. Faculty member shall prepare the detailed laboratory schedule indicating the proposed date of conduct of all the experiments by the respective batches of students and display the same in the laboratory notice board and communicate to the students at least 3 days before the commencement of the course.

6. Faculty Member and the Laboratory Assistant shall carry out the maintenance of the laboratory at least 3 days before the starting of the course.

7. Faculty members shall explain to the students in first few laboratory sessions with the necessary demonstrations about the objectives of the laboratory, relevance of the experiments in context of the industry /Field, methods of conducting the experiments, necessary calculations/ computations/flowcharts/ algorithms and the Evaluation methods/challenges of experiments.

8. At the beginning of each laboratory session, the faculty members shall spend at least 10minitues in ascertaining / explaining the necessary theory behind the concerned experiment.

9. The faculty member shall pay special attention to students who are weak in theory and equip them with the required theory background and then be given the experiment.

10. All students' in any batch are allowed to carry out the first challenge experiment and those students completing the first experiment satisfactorily shall be given the second challenge experiment.

11. During the entire process of laboratory duration both the faculty members and the laboratory assistant shall be visiting all the tables and offering the students the required information/ guidelines /safety practices/relevant standards (Both National &International).

12. Students shall be involved in group discussions after the results are obtained on the inferences to be drawn based on the result.

(Note: This is a very important activity as it inculcates among the habit of involving in group discussions from the beginning and develops the skills that will be useful during the placement in the final year)

13. Faculty member shall evaluate the experiment and award the grade for the experiment on the same day before the students leave the session.

14. The faculty member shall carry out the final evaluation and ascertain that the outcomes are achieved and the same is documented.

15. The Director/ Head shall visit all the laboratory sessions at least once in a day and monitor the progress of laboratory sessions.

16. The Director/ Head shall meet all the students in respective batches at least 3 times in a semester and monitor the quality of the input given to the students through laboratory experiments and obtain from them the suggestions if any accordingly instruct the faculty members to incorporate the suggestions if feasible.

Guidelines for Project Work Planning, Execution & Evaluation

1. The Head/ Director shall identify a senior faculty member as the Project work Co coordinator for a minimum period of one academic year.

2. The Project Head shall arrange the Final Project work rehearsal presentation of the current final year students and the pre final year students shall be compulsorily made to sit in those presentations 15 days before the final evaluation of the project work. All the students shall be informed the date of such presentation in advance.

3. The Head/Director in consultations with the faculty members, BOS members, industry experts shall decide the particular application area /group of areas for all the project work for the fourth coming semester and the same shall be announced before the pre final year's examinations.

4. The Project Head shall obtain the broad areas of specializations/topics of all the faculty members within the Application Area identified for the year and the number of batches they intend to guide. He/she shall compile the same and after due approval from the Head/Director shall announce the same before the end of the pre final year classes. Students shall be informed immediately to submit their choices of the topic for carrying out project among the list of topics notified before commencement of the vocation.

5. The Project Head shall compile all the topics received from the students and form the tentative batches of students based on the choices of the students. However before deciding the group of students in a particular batch, the Project Head shall consult each of the students & seek their consent to work in the batch allocated to them. There shall be a minimum of 3 members and a maximum of 5 members in each group. Very rarely on special occasions a single student's project is accepted.

6. The Head/ Director shall call for the meeting of all faculty members within 3 days of formations of tentative batches of students and after discussion he shall allot the batches to the faculty members for guiding the project work. The Head/Director may invite for the said meeting a few industry experts in the relevant areas to seek the feasibility of associating students in their respective industries. Generally each faculty members shall guide a minimum of 4 project works & as a special case, if the work demands 2 faculty members can be allotted as guides for a single project. There shall be a provision to engage an external guide from industry or other institutions but in such cases there shall be an internal guide also. The list of guides allotted shall be announced to all the students within a day after the allocation of the guide and advice the students to immediately meet the guides.

7. The Project Head shall prepare and display the complete project work schedule mentioning the following:

    *Scheduled dates/weeks for the students to meet the guides,
    *Submissions dates for the tentative titles of the project work, objectives, methodology, expected out comes.
    *Presentations date for the students to present to the guide and to the school.
    * Midyear evaluation dates, synopsis submission date.
    * Final report submission date, tentative dates for final rehearsal to the entire school and the pre final year students

* The final evaluation date.

8. All the guides shall meet the groups in the stipulated time at least 2 times in week and guide the students in following different phases of project work and record the same in the prescribed project Guide dairy:
    - Project title, objectives, methodology, outcome deciding phase.
    - Literature Survey phase
    - Problem Formulation phase
    - Data collection &compilation phase
    - Problem solving phase
    - Result Analysis &inference arrival phase
    - Report writing &Submission phase
    - Evaluation phase.

9. The guides shall also evaluate the students in all the above phases and inform the students about their performance.

10. The Head/Director shall monitor at all the phases of all the project work and obtain feedback from the faculty members and the students at least once in every month.

11. The final evaluation of the project work shall be carried out by a team of at least 3 members out of which one shall be the external expert from the industry.

12. The Head/ Director shall request the Director R&D or his to be present in some of the project presentation to identify the potential project work for further research, publication, funding etc.

13. The Director- Academic, Internal Quality shall attend to some of the presentations to monitor the relevance and quality aspects of the project work in all the schools.

14. At the end of the evaluations the Guides shall submit a comprehensive report of all the activities carried out with the students' project dairy, Guides dairy to the project Head in turn the same shall be discussed in the school meeting. If any short falls are noticed the same shall be recorded with the corrective measures to be taken for future.

15. The Head/Director, Project Head, Director R&D or his representative shall decide about the best project of the year and recommend for the necessary award and select the few best project work for display at the schools project display laboratory.

Guidelines for planning Industrial Training

- A minimum of two industrial training shall be planned and implemented per programme with a minimum duration of 5days preferably during vocations.
- The list of industries shall be considered for training shall be identified by the each school in accordance with the programme and shall be submitted to the Head-Industry-Institute –Interaction.(III)
- All the faculty members, Director/ Head shall try to establish the contact with the required number of industries apart from the contact established by the Head (III).
- On obtaining the requisite permission from the specific industry, a few faculty members of the school shall visit the industry and consult with the concerned person to decide about the specific input the students should get during the training programme.
- The students shall be briefed about the industry and the expected learning and experience from the training and also how does that help in achieving some of the Programme out comes. The daily dairy to be maintained by the students is distributed and explained about its usage and importance.
- During the training process the concerned faculty Members shall be in touch with the students and the training personnel for monitoring the progress.
- At the end of the training the students shall be informed to submit the comprehensive report of the training in the prescribed format of the school and submit for evaluation.
- At an appropriate time during the semester a viva is conducted to all the students by the concerned faculty member with a team of evaluators.
- All the successful students shall be issued a certificate of training.

Guidelines for Time Table framing

The Head/Director of each school shall from among the faculty members identifies two Timetable c coordinators for the school.

The Principal Director –Academic shall identify one of the head/ Director of a school as time table in Charge to coordinate the process of time table formation 10 days before the beginning of the forthcoming semester.

In the first meeting the Slot exchange between schools for various laboratory sessions shall be first decided by the concerned coordinators and then proceed for the formulations of individual school time table by the respective school coordinators and prepare the draft time table within a day after the meeting.

The Timetable in Charge shall call the second meeting within next 2 days and finalize the entire timetable &circulate the same to all the faculty members with a note to bring possible corrections if any within a day.

After the necessary corrections the final timetable is released by the Director-Academic within a day. Final version of Timetables is circulated amongst schools and a copy is sent to the Registrar, Director-Planning Director- Internal Quality Registrar Evaluation, The library, Training &Placement cell, The Vice chancellor.

The following Rules shall be followed while formulating the timetable:

➢ Head/ Director shall not have first lecture.

➢ No faculty member shall have two lectures back-to-back.

➢ No immediate lecture after lab for a faculty and vice-versa.

➢ No full day engagement for a faculty.

➢ Preferably labs should be allotted in second half.

➢ Saturday is open day.

➢ Varying lecture duration (50 min.'s and 90 min.'s format) wherever necessary.

<u>Quality Circle Meeting Report</u>

School: year:

Programme: sem:/Batch:

Members present:

1

2

3

4

Salient points discussed during the meeting and the decisions taken to enhance the quality of the course delivery:

1

2

3

4

5

 Signature of the class teacher   Submitted to the Head/Director

Course Completion Summary Sheet

NAME OF THE FACULTY MEMBER: **NAME OF THE COURSE:**

COURSE CODE: **PROGRAMME:**

SCHOOL: **FACULTY: COURSE**

DURATION: **NATURE OF THE COURSE:**

NO. OF REGESTERD STUDENTS:

1) **General Remarks on the attendance in the class:**

2) **Statistical Details about the students' Performance in IA1, IA2, IA3**

3) **Level of achievement of Course out come by the class (Average)**

4) **Innovative Practices followed in the course:**

5) **Salient Features of students' Feedback:**

6) **Experts feedback on students' Achievement:**

7) **Self-assessment on the course quality:**

8) **Recommendations for the future**

Signature of the Faculty Member

Quality Guidelines to Enhance the Teaching Skills

I. Are You A Professional Teacher?

Now you are a teacher. Whatever might be the reasons, which were responsible for you to enter in the world of education, start liking the job and enjoy the beauty of this profession? Do not repent. Teaching is very complex and noble profession. You are responsible for making the career of students and build the nation.

Ponder over certain questions given below and decide how to advance further in this profession.

1. Why have you become a teacher?
2. Are you happy with the profession? If yes – How? If no –Why?
3. Who was the greatest teacher you ever had? Why do you choose that person?
4. Recall the past – Think of a teacher whom you disliked most?
5. What do you want most of a teacher? You personally.
6. What are most important qualities a good teacher should have?
7. What are the expectations of students from a teacher?
8. Can you write down a paragraph describing "The Real Teacher"?
9. How will you develop these qualities?
10. Do you learn from students? How?

II. Do You Know?

- A child does not have a **fixed amount of intelligence**. The level of intelligence depends on the environment and the quality and quantity of stimuli that the child receives in the first five years.
- The size and texture of the child's brain depends to a great extent on the **nature and amount of stimulation** it receives.
- The child's brain grows more rapidly as also the body – during the first five years. Thereafter the rate of growth slows considerably.
- The child's intellectual capacity is 50% developed by the time they are four and almost 80% by the time they are eight. After age eight, growth slows considerably.
- The child's need to learn, explore, do something new is as strong as their need for food.
- "Competition" does not make a child give outstanding performance, does not build character and prepare them for life in the real world and build up the self – confidence and self-confidence. These are myths.

- Experts suggest cooperation for teaching – learning in classroom. Some figures: 80% cooperative, 10% competitive and 10% work alone.

(Source: Basic Managerial Skills for all by E. H. McGrath, S. J.)

III. Evaluate Your Communication / Presentation Skills

A) Communication skills:

Instruction: In the questionnaire a cluster of skills / situations related to communication / presentation are given. Identify your present status in terms of your competency by tick marking (√) in the appropriate column. Analyse in which skills you are weak. Think as to how you would like to develop the weak skills up to a minimum competency level. Remember communication / presentation skills are very crucial for a teacher. These skills are directly related to teaching effectiveness.

QUESTIONNAIRE

S.I. No.	Skills / Situations	Excellent	Very Good	Good	Average	Poor
A	**Communication Skills**					
1	Reading					
2	Writing					
3	Speaking					
4	Listening					
5	Non – Verbal (Body Language)					
B	**Presentation Skills**					
6	Classroom					
7	Laboratory					
8	Seminary / Conferences					
9	Meeting					
C	**Teaching Methods / Techniques**					
10	Question / Answer Technique					
11	Demonstration					

12	Brain Storming					
13	Handling a Case Study					
14	Assignment – Designing & Conducting					
D	**Counselling**					
15	Identifying problems of students					
16	Conducting counselling interview					
17	Providing guidance to students					
18	Interacting with parents					
E	**Command on Language**					
19	Hindi					
20	English					
F	**Any other (Please mention)**					
21						
22						

B) Teaching Skills

There are certain teaching skills which are very critical to make teaching more efficient and effective. Teachers who have command on these skills make students learn faster and better.

Instruction: In the questionnaire, highly essential teaching skills are listed. Identify your present status in terms of your competency by tick marking (√) in the appropriate column.

Ponder over your weak areas and think of strategies you will adopt to improve.

QUESTIONNAIRE

Sl. No.	Criteria	Excellent	Very Good	Good	Average	Poor
A	**Presentation**					
1	**Introduction**					
1.1	Gaining Attention & Motivation					
1.2	Informing learners of instructional objectives					
1.3	Recall of pre-request learning					
2	**Development**					
2.1	Content appropriateness					
2.2	Methodology of teaching					
2.3	Question answer technique					
2.4	Students active participation in learning					
3	**Consolidation**					
3.1	Recapitulation of points covered					
3.2	Assessment of students performance					
3.3	Giving assignment for practice, retention and transfer of learning					
3.4	Informing students about the objectives & topics of next class					
B	**Use Media & Methods**					
1	Chalk Board / White Board					
2	Charts					
3	Models					
4	Demonstration					
5	Any other (please mention)					
C	**Delivery**					
1	Voice Audibility					
2	Quality of Voice					
3	Speed of Presentation					
4	Gestures and Mannerism					

IV. Teaching and Learning - Some Thoughts to Ponder Over

Some assumptions are given below. Indicate your Agreement or Disagreement, Justify either way.

1. Children are by nature smart, energetic, curious, and eager to learn and good at learning.
2. Children learn best when they are happy, active, involved and interested in what they are doing.
3. The average student has an inherent dislike of work and will avoid it if they can.
4. Children learn least or not at all when they are bored, threatened, humiliated, frightened.
5. Teaching is telling.
6. Tests reveal more about teachers than about students.
7. Learning and doing are separate and opposed activities.
8. Learning is the process of acquiring and remembering ideas and concepts.
9. To enable the student to accept him or herself as valuable, competent, and able to manage and affect one's own life:- this should be the core objectives of all education.
10. What is presented in the lecture is what the students learn.
11. All learning takes place in the classroom.
12. What the student need is self – confidence, the capacity to feel that they are master of environment.
13. A student's ability to use a concept is more important than the ability to describe it.
14. Any subject can be taught effectively in some intellectually honest form to any child at any stage of development.
15. Learning means teacher, classroom, textbook

(Source: Basic Managerial Skills for all by E. H. Mc. Grath, S. J.)

V. Teaching

❖ Teaching is essentially a means of facilitation and acceleration of learning.

❖ Any form of teaching which does not result in learning or behaviour modification by the students is null and void; it cannot be termed as teaching.

❖ According to oxford dictionary, the meaning of the word "teach" is: teach / vt/ cause somebody to know or to be able to do something: teach a child how to swim.

❖ The purpose of teaching is to cause or to produce an effect in a person; the effect must be in terms of additional knowledge or a capability to do.

❖ There is a widespread fallacy that the ability of a teacher depends merely upon his/her knowledge of the subject matter. They say: He, who knows, can teach. This is just not an unequivocal truth. One may be known -all, yet one may not be able to facilitate or inspire learning.

❖ Competency to teach is an additional dimension of a teacher over and above subject matter.

❖ Teaching is an art. As an art, it comprises of a set of skills. As a science, it has its foundations in the psychological and pedagogical principles of learning.

❖ The subject matter expertise and teaching competency constitute necessary and sufficient conditions of teaching ability.

❖ Teaching is management of learning. A teacher should manage resources and implement Programmers to create the desired learning outcomes like the given – below:

   i)   Learning by objectives   ii) learning to inquire   iii) learning to discuss

   iv) Learning to discover   v) Learning to organize vi)   Learning to learn

❖ A teacher does not have to cover the whole subject; he/she may instead uncover parts of the subject.

VI. Learning

➢ Learning is acquisition of habit, knowledge and attitudes. It involves new ways of doing things, and it operates in an individual's attempts to overcome obstacles or to adjust to new situations. It represents progressive changes in behaviour; it enables him to satisfy interests to attain goals.

➢ Learning is relatively permanent change in behaviours.

➢ Learning is a process which involves acquisition, organization, retention and application or transfer of knowledge, motor skills, attitudes and other related social skills.

➢ Learning is individual to a learner. It takes place with one's own motivation and interest. Motivation is the most predominant factor which governs the quantity and quality of learning. It implies the existence of a motive force and the mobilization of one's energy toward the attainment of a goal.

- Motivation may be intrinsic or extrinsic. Intrinsic motivation refers to a state of self arousal, activation and vigor within a learner. Extrinsic motivation is provided by factors such as praise, positive reinforcement and reward system. Often extrinsic motivation triggers intrinsic motivation.

- Rate of learning and cumulative learning are non-linear functions of time. The maximum span of attention of an adult learner is about 20 minutes.

- Quality of learning is reflected by the extent of confidence one gains and the proficiency with which learning is applied, transferred and retained with the passage of time.

- It has been observed that over – learning, interactive learning and sustained learning utilizing greater number of sensory channels lead to better quality of learning.

VII. Learning Principles

1. Motivated learner is more likely to learn than an unmotivated learner.
2. A learner learns a thing by doing.
3. Practice in a variety of settings increases the range of situations in which the learning can be applied.
4. People learn more effectively when they learn at their own pace.
5. Knowledge of results of performance has a favourable effect on the subsequent learning.
6. Active learning with as much participation of learners as possible is more rewarding and lasting.
7. Learning is highly facilitated when the learners are informed about the objectives of the lesson in the beginning.
8. Recall or revision of previous relevant points helps the learner to understand the new teaching points.
9. To make learning better and faster, the teaching points is to be broken into smaller steps and presented in a proper sequence.
10. Learning will be effective and meaningful, if the teacher knows the performance of the learner, whether he/she has learned and if learned, up to what extent.
11. Learning will be better if the learners are provided feedback at every stage of their learning processes.
12. To make learning permanent, efforts must be made for its retention by learners   and transfer it, apply it to new situations.
13. Good learning habits are very fruitful.

VIII. Domains of Learning:

There are three domains of learning as follows:

- ➢ An element of subject matter may belong to one of the three domains or be composed of them.
- ➢ The three domains are mutually independent and hence represented schematically by a triad in the figure.
- ➢ Learning depicted as a vector PP', is, therefore a modification with three components in general.
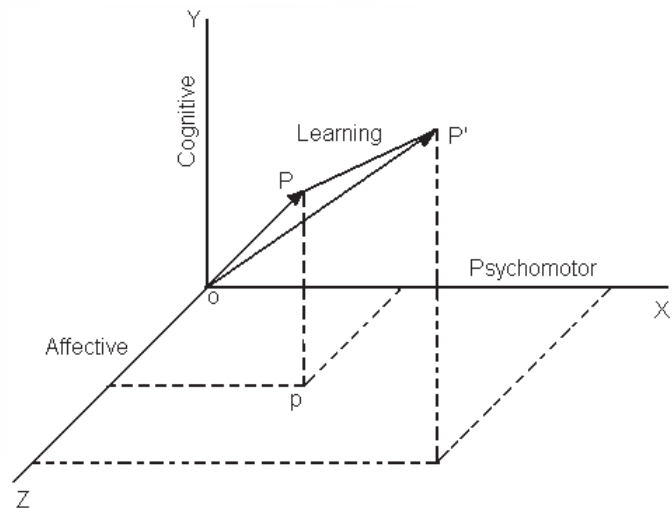
- ➢ The cognitive domain is concerned with information and knowledge, facts and figure, concepts and principles, application of principles, analysis and synthesis, evaluation and decision making. Cognitive domain emphasizes intellectual learning.
- ➢ The psychomotor domain is concerned with motor or muscular activities guided by psyche i.e. human mind. Manipulative skills, neuromuscular coordination, operation of equipment are examples of this domain.
- ➢ The affective domain includes attitudes, values and concerned for other e.g. maintenance of discipline, safety and readiness for work.
- ➢ Cognitive   -   Thinking   -   Head
    Psychomotor -   Doing   -   Hand
    Affective   -   Feeling   -   Heart

IX. Maxims of Teaching:

FROM	TO
Known	Unknown
Simple	Complex
Concrete	Abstract
Particular	General
Observation	Reasoning
Whole	Part
Part	Whole
Seen	Unseen

X. Communication

Communication is the art and science of conveying messages completely and without distortion from one human being to another. It is a two way communication.

✴ Communication may also be defined as the **Process** having the general **Purpose** of fulfilling the Receiver's **Need** of information, in which **Message** is transferred through **Channels** from the Sender (Teacher) to the Receiver (Student), resulting in an understanding **Response**.

✴ We Communicate To:

- ✓ Inform or to inquire
- ✓ Persuade
- ✓ Influence – to affect with intent
- ✓ Entertain

✴ **Successful Communication Occurs When:**

- ✓ The message is understood
- ✓ The message accomplishes its purposes

✓ The sender and the receiver of the message maintain favourable

Relationship.

Effective Communication does

Not just happen.

It is carefully planned

Planned Communication

Makes time tick faster

XI. Barriers Of Communication

❖ **Physical Barriers:** Noise, invisibility, environment & physical discomfort, distraction and ill health.
❖ **Language Barriers:** Verbalism, verbosity and unclear graphics and symbols.
❖ **Psychological Barriers:** Prejudice, disinters inattention, imperceptions, redundancy, unrewarding experience, feeling of anxiety and unfulfilled curiosity.
❖ **Background Barriers:** Previous learning, cultural disparities and previous environment of working whereby one expect authenticity of the message.

XII. Overcoming the Barriers

❖ Use Feedback

❖ Use Face to Face Communication

❖ Be Sensitive to Receive Words

❖ Be Aware of Symbolic Meanings

❖ Use Direct, Simple Language

❖ Use a Correct Amount of Redundancy

❖ Moving from Defensive to Supportive Communication.

XIII. Effective Presentation

A lecture becomes more effective when it is well planned and implemented (delivered).

Some guidelines for making the lecture effective are given below: -

Planning the Presentation:

a. Decide about the objectives

b. Prepare teaching point outline

c. Prepare how you will introduce your presentation

d. Develop the topic

e. Decide about summarization and evaluation

Making the Presentation:

1. Keeping students interested

2. Style and voice

3. Movements

4. Distracting Mannerism

5. Illustrations

    a) Visual Aids   d) Examples

    b) Verbal Illustrations   e) Frame of Reference

    c) Analogies

    d) Examples

6. Two Way Communication

XIV. Guidelines for Making Lecture Effective

A. Delivery

➢ Speak clearly and audible enough so that every student can hear you.

➢ Modulate the voice

➢ Do not speak too rapidly or too slowly, give, pause where necessary.

➢ Do not read from the notes. Maintain eye to eye contact with students. Observe students expressions, movements and reactions to determine whether you are being listened to and understood. Modify your approach and strategy when needed.

➢ Be enthusiastic and lively.

➢ Use conversational and natural language avoiding difficult words.

➢ Avoid distracting phrases, gestures and mannerism. Use gestures for emphasis.

➢ Give regular pauses so that students can catch their breath and ask questions. It is "better to talk a little and stop short than to go on for too long.

B. Presentation

➢ Begin each lecture by kindling students' interest, expressing positive expectations and sharing the objectives for the presentation.

➢ Present ideas and concepts linking with students interest, previous knowledge and experience.

➢ Don't introduce new terms, words, concepts, before you have explained them.

➢ Follow a prepared outline or lesson plan. Be prepared for unexpected. Appear spontaneous even when you are following the plan closely.

➢ Relate the material presented to the present tasks, needs and aspirations of students.

➢ Give positive reinforcement for answers given by students to the questions posed by you. Also questions posed by students should be acknowledged and answered.

➢ Limit your one-way communication or monologue to 15 – 20 minutes. Change activity before this time interval.

➢ Solicit student's participation by asking through provoking questions, posing a problem or stating a case to be analyzed.

➢ Make use of relevant illustrations – visual and verbal (examples, non-examples, analogies, anecdotes) throughout the presentation.

➢ Use instructional media properly. You must learn how to use chalk board, and other media effectively.

➢ End each lesson by linking whatever has been covered and introduce the future topic. Assess students formally or informally.

➢ Remember in your relationship with students that all of you are persons first, students and faculty later. Build and maintain these relationships by understanding problems and difficulties of students.

XV. Tips for Improving Classroom Teaching

Some suggestions for actions by a teacher: -

1. Draw and sustain attention of students.
2. Use appropriate strategies to motivate students to learn.
3. Establish the need for learning a subject.
4. Develop rapport with students. Call them by name, preferable by first name.
5. Allow interesting, stimulating and relevant diversions: use stories, anecdotes, cartoons, jokes etc.
6. Select "must know" points.
7. Do not talk too much, not more than 20 minutes at a stretch. After 15 minutes talk – give something to do or discuss or ask questions.
8. Give more challenging work to top 25 % students from time to time.
9. Provide additional guidance and graded exercises to bottom 25 % students.
10. Write legibly and draw neat diagram on chalk board or white board.
11. Involve students actively. Use them as resources, tap their talents. Keep class active.
12. Praise appropriately. Encourage them. Appreciate
13. Give feedback – IKR (Immediate Knowledge of Results) with suggestions for improvements.
14. Let students learn by doing.
15. Make learning meaningful by emphasizing applications in real life.
16. Use question answer properly - pose a question and let the whole class think and name the student to answer. Use wrong answer to clarify. Repeat right answers.
17. Encourage questions – when students do not ask questions, raise them yourself.
18. Use tests to give confidence, encouragement and sense of achievement. **Nothing succeeds like success.**
19. Make speech interesting. Provide vividness and colour by using analogies, anecdotes, comparisons, irony, humour, deliberate pauses, and appropriate voice modulation.
20. Organize into patterns – use diagrams, charts, tables, graphs. This helps retention and recall.
21. Consulate lessons with review, summary and applications.
22. Use AV aids appropriately for stimulus variation.

23. Control voice at proper level.

24. Encourage interaction among students. Promote collaborative learning.

25. Use non-verbal communication. Use variations in the tone, force, timing, laughs, smiles, sighs, groans purposefully.

26. Prepare and plan well.

27. Sequence from known to unknown, simple to complex.

28. Wherever possible, start with the whole, explain what it is all about, then analysis into parts and synthesis them back into whole.

29. Group competitions are better than individual competitions.

30. Visuals should be simple.

XVI. Question Answer Technique

A) Why Ask Questions?

- To elicit performance.
- To assess the students.
- To draw attention to plausible mistakes.
- To bring out misconceptions if any.
- To diagnose their learning difficulties.
- To make students attentive in class.
- To provide stimulus variation.

B) Types Of Questions:

- Direct questions – eliciting answers like yes/no, right / wrong or true / false.
- Probing questions – making students think deeper into the **matter.eg.** Why?
- Leading questions – guiding students in the right direction.
- Rhetoric questions – Where no answer is expected from students.

C) How to Ask Questions?

3 'P' s – Pose, Pause & Point

- Pose a question to the whole class.
- Pause to make every student to think.
- Point out to a particular student by name.

- Set the rule that a student will not answer unless asked to do so.

D) Types Of Responses

- Right Answer
- Wrong Answer
- Partially Right Answer
- Wrong but Intelligent Answer
- Absurd / Mischievous Answer
- No Response.

E) How to Handle Responses?

Discuss with your peers, superiors and trainer, and evolve the appropriate strategies to suit to your students and environment.

- Right Answer
- Wrong Answer
- Partially Right Answer
- Wrong but Intelligent Answer
- Absurd / Mischievous Answer
- No Response

F) Question Answer Technique Promotes

- Active Participation
- Attitude of Inquiry
- Thinking Capacity
- Student Attention and
- Satisfaction
- Intrinsic Motivation.

XVII. Instructional Outcomes

- An "OUTCOMES" is a statement of intended terminal ability of a learner.
- The ability so identified is usually executable, observable, and measurable.
- An "OUTCOMES" is also termed as "behavioural objective" or "Instructional objective" or "performance objective"

- An instructional "OUTCOME" is an action-oriented statement describing what the student will be able to do at the end of the instruction.
- "OUTCOMES" help both the teacher as well as students.

A) For the teachers the "OUTCOMES":

(a) Help to evaluate the effectiveness of instruction more precisely.

(b) Guide in preparing lesson plan, selecting appropriate instructional materials, content and instructional methods.

(c) Communicate instructional intent in unambiguous terms.

(d) Help in uniform interpretation of curriculum.

(e) Provide basis for reliable and valid test instruments of achievement of students performance.

(f) Guide in designing instructional material.

(g) Enable to plan and provide remedial instruction necessary for different students according to their specific needs.

B) For students, the "OUTCOMES":

(a) Specify the terminal behaviour they are expected to demonstrate.

(b) Provide standards to evaluate their own progress during and after the process of instruction.

- Objectives are often classified as "general objectives" and "specific objectives"
- A general objective is a general statement of student's ability. It may not be specific enough for effective teaching- learning because the behaviour may not be observable and measurable.
- A specific objective is an unambiguous and precise statement of a specific ability of a student to be developed on completion of the teaching learning process.

C) Elements of instructional OUTCOMES":

(a) The **terminal behaviour:** What the students will be doing when he/she is demonstrating that he/she has achieved the objective.

(b) **The Conditions:** Given or restrictions under which the student will demonstrate the competence.

(c) **The Criteria:** Of acceptable performance as an indication of how the learner will be evaluated.

XVIII. Bloom's Taxonomy of Cognitive Domain Knowledge

- ✍ Lowest level of cognition.
- ✍ Means recognition and recall of facts and specifics.
- ✍ It implies memorizing or acquisition of facts and principles. At this stage, a person can merely recall and recognize the material learnt by him.
- ✍ Example verbs: define, label, list, match name, recognize, state, write.

Comprehension:

- ✍ Means – interprets, translates, summarizes, paraphrases given information.
- ✍ At this level one understands the implications of the subject matter and one can interpolate or extrapolate information.
- ✍ Requires knowledge to demonstrate comprehension.
- ✍ Example verbs: compare, convert, distinguish, draw, explain, formulate, give example, identify, illustrate, relate.

Application:

- ✍ Uses information in a situation different from original learning context.
- ✍ At this level, one can generalize and apply the principles for problem solving.
- ✍ Requires comprehension of information in order to apply in new situation.
- ✍ Example verbs: calculate, compute, find, prepare, select, solve, use.

Analysis:

- ✍ Separates whole into parts until relationship among element is clear.
- ✍ Requires ability to apply information to analyze.
- ✍ Examples verbs: differentiate, compare, contrast, separate, sequence.

Synthesis:

- ✎ Combines elements to form new entity from original one.
- ✎ The analysis and synthesis stages of learning enable a person to analyze a given situation and to integrate the facts and principles with the knowledge of other things respectively.
- ✎ Requires analysis in order to synthesis.
- ✎ Example verbs: classify, combine, compile, compose, construct, create, derive, devise, generalize, summarize, conclude.

Evaluation:

- ✎ Involves acts of decision making, judging or selecting based on criteria and rationale.
- ✎ This highest stage enables a person to evaluate by constructing instruments of evaluation and by applying the criteria: one may judge and take decisions.
- ✎ Requires synthesis in order to evaluate.
- ✎ Example verbs: criticize, decide, evaluate, judge, justify, predict.

XIX. Illustrative Verbs for Stating Objectives

List 'A'

Illustrative Verbs for Stating General Objectives:

Know	Analyze
Comprehend	Design
Understand	Generate
Apply	Evaluate

List 'B'

Illustrative Verbs for Stating Specific Objectives:

(1) COGNITIVE DOMAIN:

1.1 Knowledge:

Define	List	Reproduce
Identify	Match	Select
Label	Name	State

1.2 Comprehension:

Convert	Estimate	Give examples
Defend	Explain why/how	Illustrate
Describe (a procedure)	Extend	Infer
Distinguish	Generalize	Summarize

1.3 Application:

Change	Manipulate	Produce
Compute	Modify	Relate
Demonstrate	Predict	Show
Deduce	Prepare	Solve

1.4 Analysis:

Breakdown	Discriminate	Separate
Differentiate	Distinguish	Subdivide

1.5 Synthesis:

Categorize	Create	Organize	Reorganize
Combine	Devise	Plan	Revise
Compile	Design	Rearrange	
Compose	Generate	Reconstruct	

1.6 Evaluation:

Appraise	Criticize
Compare	Justify
Conclude	Interpret

Contrast	Support

(2) AFFECTIVE DOMAIN:

Adhere	Develop	Resolve
Assist	Help	Select
Attend	Influence	Serve
Change	Initiate	Share

(3) PSYCHOMOTOR DOMAIN:

Bend	Feed	Move precisely	set
Calibrate	File	Operate	Straighten
Conduct	Grow	Paint	Strengthen
Connect	Handle Perform	skilfully	Time
Convert	Increase	Prepare	Transfer
Decrease	Insert	Remove	Type
Demonstrate	Keep	Replace	Weight
Dissect	Lengthen	Report	
Draw	Limit	Reset	
Extend	Manipulate	Run	

XX. Important Problems Faced by Teachers

There are certain problems which are faced by majority of teachers. There is no mathematical solution for each problem. There are several factors required to be considered for evolving the appropriate solutions. The strategies may vary from class to class and even from school to school. Therefore, each teacher needs to search for the right solutions. This can be done by discussion amongst peers, consulting literature and seeking advice from experienced teachers and trainers.

These problems are given below in question form.

1. How to make last theory period more interesting and lively?
2. How to make dull students participate in learning?
3. How to cope up with students having varying entry behaviour?
4. How to make lecture interesting, interesting and motivating?
5. How to make fundamentals more clearly to students?
6. How to teach concepts (concrete & abstract) and principles / laws?

7. How to increase attendance of students in the class?

8. How to maintain discipline in the class?

9. How to make students study regularly?

10. How to develop reading habit in students?

11. How to behave with students?

12. How to improve the behaviour of students?

13. How to develop self – confidence and self – esteem in students?

14. How to inspire ordinary students to do extra – ordinary work or task?

15. How to inculcate positive personality in the students?

16. How to develop thinking skills and creativity in students?

17. How to deal with conflicts of students?

18. How to counsel students for problems related to their study and career?

19. How to guide and counsel parents?

20. How will you make yourself more acceptable to students?

21. How will you enhance the quality of your teaching?

Quality Guide Lines for Effective Evaluation

I. Evaluation:

"Assigning value to the learning /abilities judged of a student on the basis of suitable examinations."

"Evaluation is the process of delineating, collecting and providing information useful for judging decision alternatives"

II. Basic Concepts:

i) MEASUREMENT: Quantification or assigning numbers to a characteristic /ability of a student.

ii) ASSESSMENT : Determining the worth of something by -measurements, qualitative, descriptions

iii) EVALUATION : Judgmental process based on synthesis of measurements, qualitative, descriptions

III. Purposes of Evaluation/Assessment:

a) Diagnosis and feedback on strength and weaknesses.

b) Judging effectiveness of teaching learning methods.

c) Extent of achievement of objectives.

d) Grading and certification.

e) Monitoring students' progress.

f) Selection and appraisal.

g) Guidance for taking appropriate decisions.

IV. Types of Assessment/ Evaluation:

i) FORMATIVE ASSESSMENT : Assessment during forming or developing or learning stage.

ii) SUMMATIVE ASSESSMENT : Assessment at the end of semester for a course or related with sum total.

iii) PROCESS ASSESSMENT : Assessment during process of some learning task.

iv) PRODUCT ASSESSMENT : Assessment of product or learning outcome after completion of a task.

V. 6 Questions about Assessment/ Evaluation:

1. Whom?   Assesses (learner)

2. Why?   Purposes

3. What?   Objectives, process, and product

4. How?   Methods

5. Where & when?   Location & timing

6. By whom   Assessor (examiner)

VI. a) What To Assess ?

- Objectives - domains

- Process

- Product

b) Where to Assess?

Classroom, Laboratory, Project, Workshop, Worksites, Industry

VII. Characteristics of Good Assessment System

a) VALIDITY (Authenticity of content selected) Truthfulness

Extent to which an assessment procedure does what it is intended to do

b) RELIABILITY (Objectivity)

Consistency of assessment accuracy in the test scores

VIII. Characteristics of Good Assessment System

- Practicability/Feasibility: Implementing the examination(s) without problems or difficulties like, time, resources, expertise, environment, and context.

IX. Purpose / Intention to Hit a Ball inside Goal Post

- Not reliable
- Not valid

- Not reliable
- Not valid
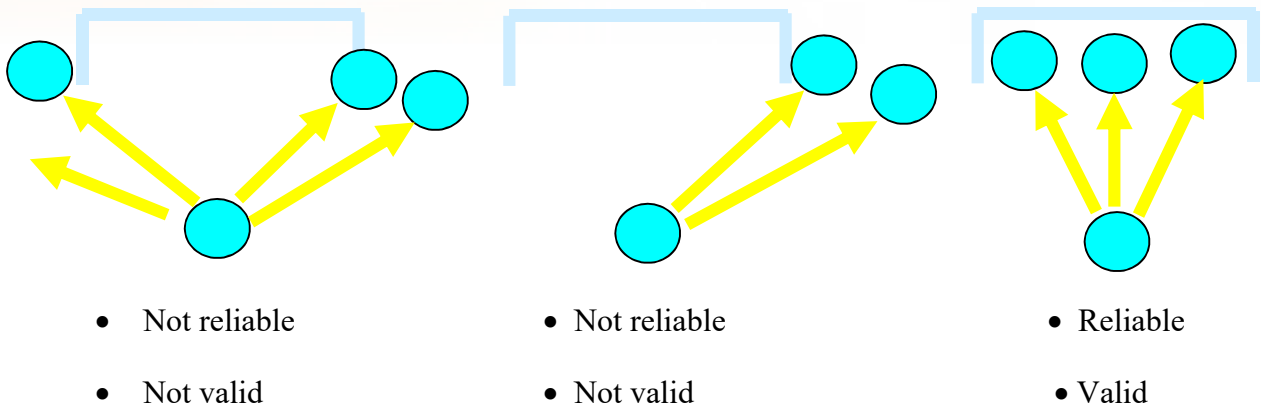
- Reliable
- Valid

Reliability is essential for validity but not sufficient.

X. Enhancing Validity, Reliability, Practicability

i) Validity: a) By Defining Purpose of Assessment,

b) through Coverage of Entire Curriculum.

ii) Reliability: a) Through Objectivity, (no divergent interpretations)

b) By Asking More Questions, (more measuring points)

c) By Proper Marking Schemes (Avoiding Personal Variables.

iii) Practicability: a) Cost Effective or More Economical
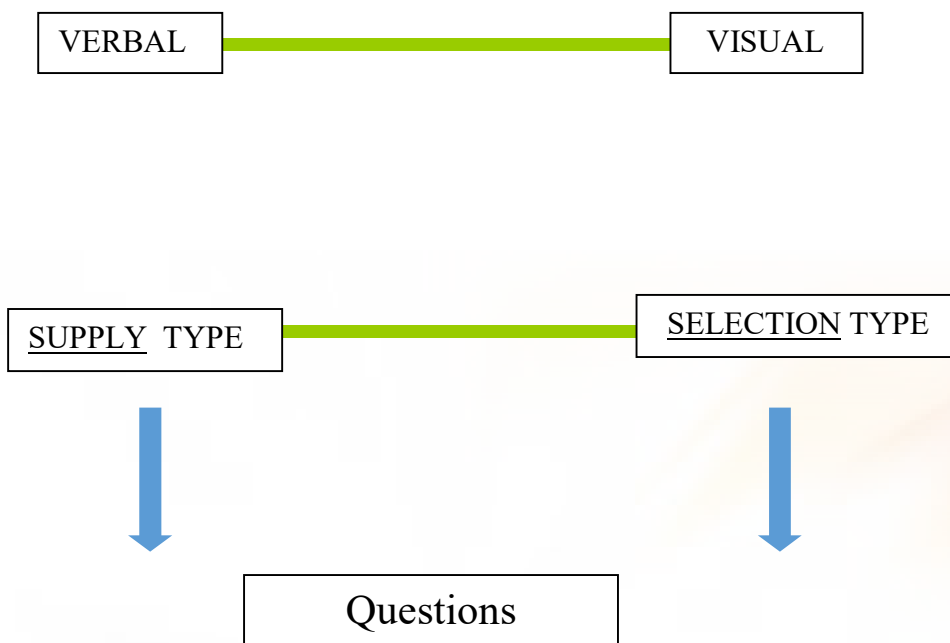
b) Implementable (Simple and Easy to Implement.)

XI. Sources of Error in Assessment

    a) Ambiguity in questions

    b) Guessing

    c) Time

    d) Administrative factors

    e) Physical conditions

    f) Marking errors

XII. Assessment Techniques

    a) Written Test OR Pen-Paper Test

    b) Observations

    c) Portfolios

    d) Oral Tests

XIII. Pen-Paper Test

```
┌───────────┐                    ┌───────────┐
│  VERBAL   │────────────────────│  VISUAL   │
└───────────┘                    └───────────┘


┌───────────────┐                ┌─────────────────┐
│ SUPPLY  TYPE  │────────────────│ SELECTION TYPE  │
└───────────────┘                └─────────────────┘
        │                                 │
        ▼                                 ▼
         ┌──────────────────────────┐
         │        Questions         │
         └──────────────────────────┘
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XIV. Supply Type Questions
(Free Response Question)

    i) Short answer type: (less subjectivity)

    ii) Structured or restricted: response type

iii) Extended response or essay: type (more subjectivity)

XV. Selection Type Questions: (Objective Type), (Free Response Questions)

- True or false items
- Matching items
- Multiple choice items (3 or 4)

XVI. Observations

a) For Assessing Skills and Attitudes

b) For Process and Product Assessment.

XVII. Types Of Observations

a) INCIDENT OBSERVATIONS: May or may not be for any specific
purpose/action

b) PLANNED OBSERVATIONS:

i) CHECKLIST - Presence or absence   - Yes / No

ii) RATING SCALE - Degree to which a characteristic is present

iii) INDICATORS   -   Criteria of acceptable performance.

XVIII. Checklist : Example Task Process

Did The Candidate …

☐ a) Check the tools and equipment before starting the task?

☐ b) Wipe the mating parts of the bearing and housing shafts?

☐ c) Check the diameter of the shaft and the bearings?

☐ d) Reset and replace special tools?

☐ e) Complete the task in 50 min. or less?

XIX. Indicators Incorporated In The End Product

Was There Evidence That …

☐ a) Oil or grease had been smeared on the working parts?

☐ b) The amount of end play was less than 1mm.

☐ c) The housing, shaft and bearing were unmarked?

☐   d) The housing, shaft and bearing had, on completion of the task, been cleared and prepared ready for installation?

XX. Example Of A Rating Scale (7- Points)

This is an example for a wood working task. In this a description is given of the quality appropriate to each score.

1. Quality of Gluing Operation

1   2   3   4   5   6   7

a) Bubbles Of Glue Under Finish

b) Considerable Discolouration

c) Slight Discolouration

d) No Evidence Of Glue

2. Quality of Clamping Operation

1   2   3   4   5   6   7

a) Splitting Of Timber

b) Deep Impression

c) Marked Surface

d) No Evidence Of Clamp

XXI. Portfolios

Typical file or folder maintained by the learners and submitted for assessment.

e.g. 1. Laboratory/ project file,

2. Daily diary

3. Collection of drawing, sketches etc.

XXII. Oral Test (Viva-voce)

a) The skills and ability, which can't be fully assessed by other form of tests.

b) Additional questions needed to ask.

c) To maintain direct contact with learner.

d) To assess attitudes (TPD, ETHICS, MANNERS)

XXIII. Short Answer Question

a) List the 3 necessary elements of behavioural objectives.

b) If the diameter of a circle is 10 cm, what is its area?

c) In air brake system, air pressure in the brake pipe is _____ kg/cm^2

and that in the feed pipe is _____ kg/cm^2

XXIV. The Structured Questions

These are particularly suited to test certain group of abilities.

General Format: A given situation in the form of a diagram / passage / problem

Sequential Sub Question: Sequential sub question
Sequential sub question
Sequential sub question

XXV. Essay Type Questions

Open Ended –

i) Unrestricted Response Questions

Example - Write an essay on the development of technical education in India since 1950.

ii) Restricted Response Questions

EXAMPLE - Write in not more than ten lines the use of behavioural objectives in planning of instructions.

XXVI. Specification Table:

a. to ensure the full coverage of curriculum for the assessment
b. to enhance content validity in the assessment

▪ A specification table is a blue print of
   a. Test
   b. Designing question paper

XXVII. Specification Table

Chapter No.	Allocation of marks for assessing levels of Learning			Total marks
	Knowledge	Comprehension	Application	
1	7 (2+2+3)	8 (4+4)	5 (5)	20
2	8	7	10	25
--				
Total	15	15	15	100

XXVIII. Advantages of Specification Table

1. How important is each topic in the total learning experience?

2. How much time/effort is expected to each topic during instructions?

3. At what levels the topic/ sub-topic(s) to be taught?

XXIX. Assignment:

1. Select curriculum of a subject

2. Analyze the curriculum of subject.

3. Prepare specification table by allocating marks at different levels of learning.

4. Identify types of questions at each level of learning.

5. Design questions as per specification table.

6. Develop sample question paper for selected subject.

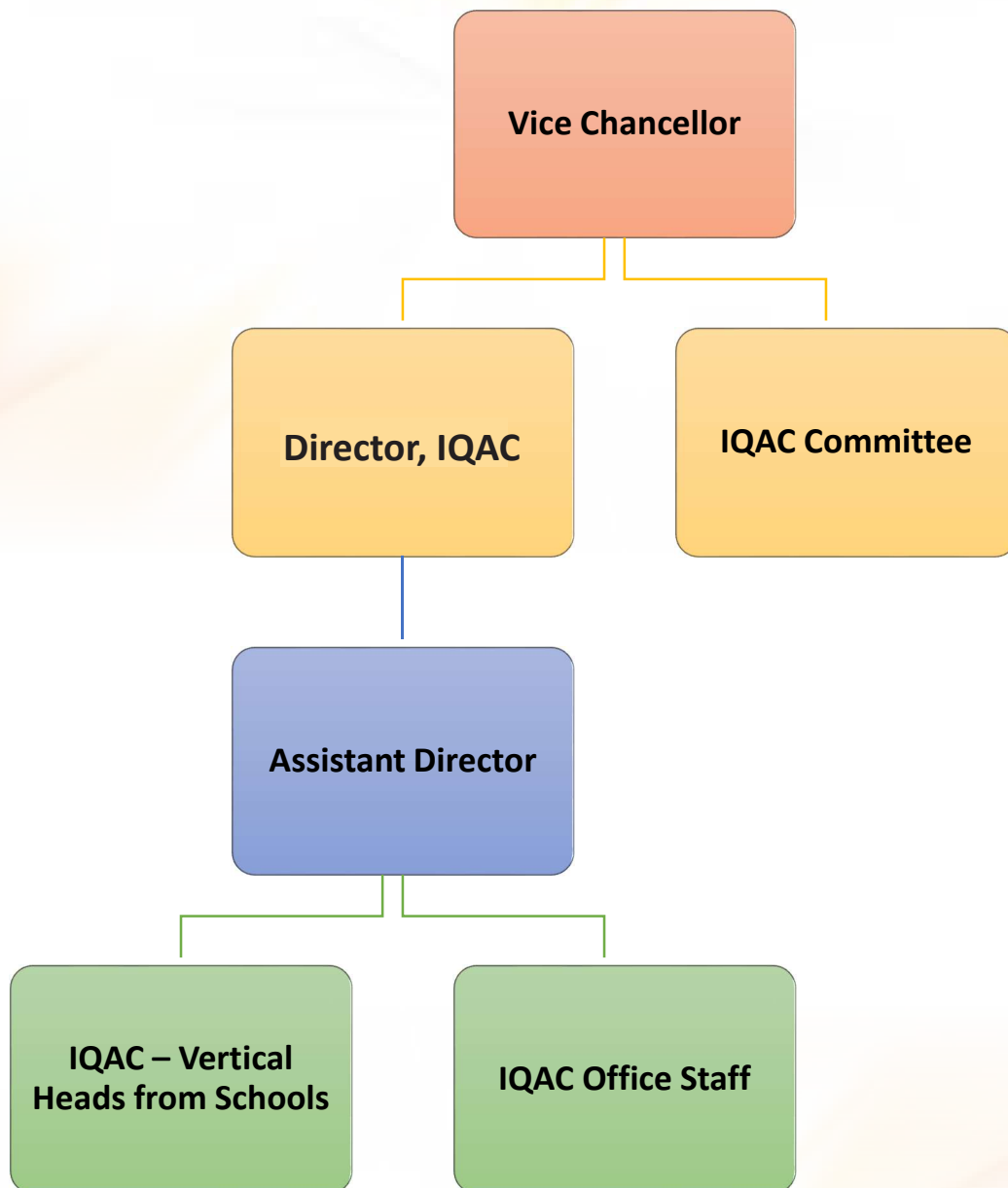## Expected Outcomes of IQAC at REVA University

- NAAC Accreditation
- NBA Accreditation
- Accreditation by Commissions of ABET (www.abet.org) of Engineering and other Programs
- IET Accreditation
- Rating by QS – Stars
- Ranking by NIRF
- Ranking by QS/THE
- UGC/MHRD successful reviews
- Annual reports of the University
- Revision of UG/PG regulations
- Student/alumni/faculty/employer/parent feedback

Composition of Internal Quality Assurance Cell (IQAC)

Chairperson	Vice Chancellor
Teachers	Deans & HODs
Management Representative	Trustee
Senior Administrative Officers	Registrar & Other Senior Administrative Officers
Nominee from Local Society, Students and Alumni	One Local Representative Students Representative from any School/Program Alumni Representative from any one School / Program
Nominee from Employers/Industrialists/ Stakeholders	One Employer Representative One or Two Parent Representatives from any School / Program
Coordinator of the IQAC	Director, IQAC
External Experts	One / Two Academicians
Others	Chancellor, Pro Chancellor

Organogram

```
                    ┌─────────────────┐
                    │  Vice Chancellor │
                    └─────────────────┘
                    │                 │
          ┌──────────────┐    ┌──────────────┐
          │ Director, IQAC│    │IQAC Committee│
          └──────────────┘    └──────────────┘
                 │
          ┌──────────────┐
          │Assistant Director│
          └──────────────┘
            │           │
  ┌──────────────┐  ┌──────────────┐
  │IQAC – Vertical│  │IQAC Office   │
  │Heads from      │  │Staff         │
  │Schools         │  │              │
  └──────────────┘  └──────────────┘
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Vice Chancellor

Director, IQAC

IQAC Committee

Assistant Director

IQAC – Vertical Heads from Schools

IQAC Office Staff

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