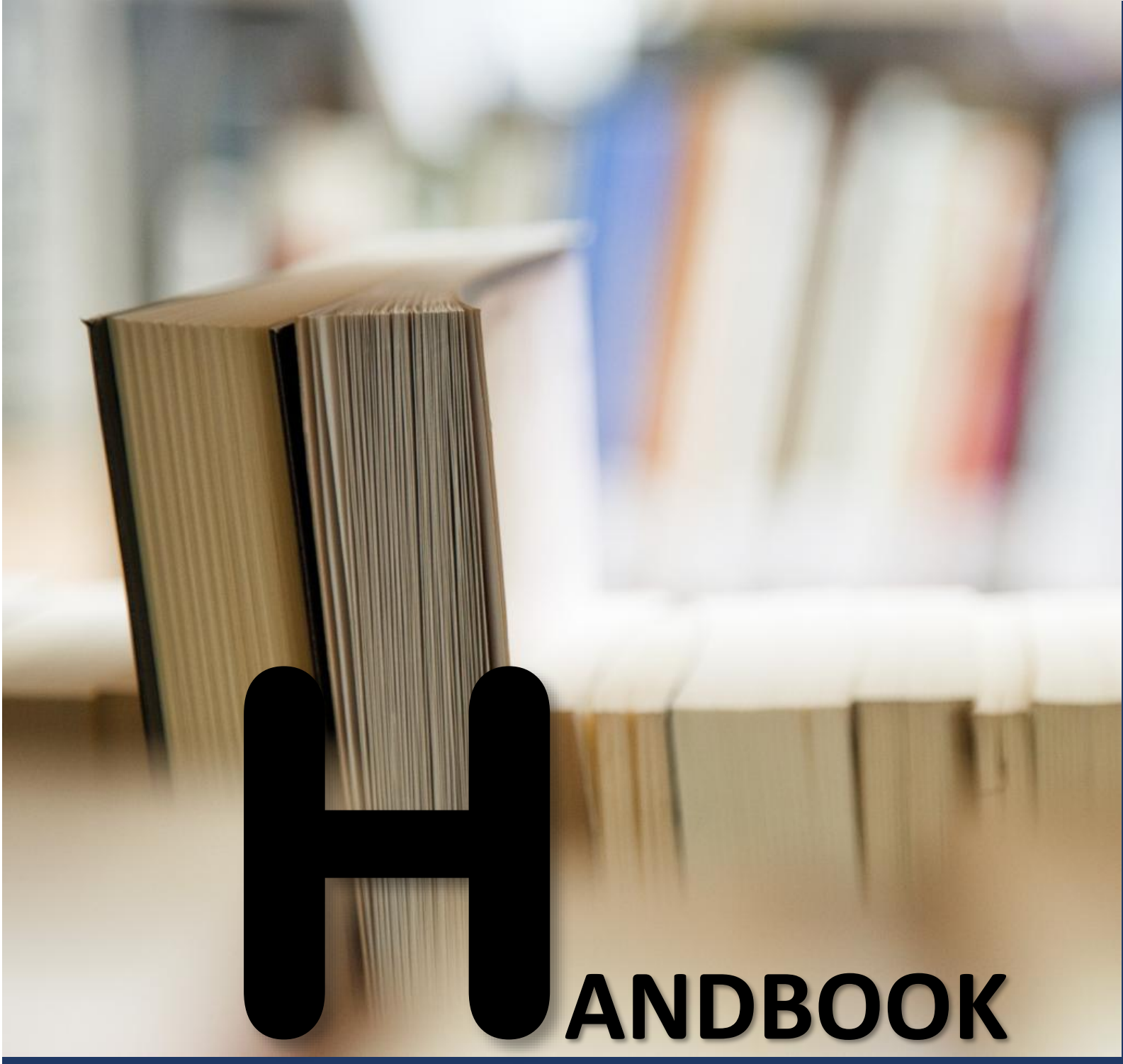


HANDBOOK

ATTAINMENT OF COs & POs

UNIVERSITY OF ALLAHABAD

(A CENTRAL UNIVERSITY)

PRAYAGRAJ, UTTAR PRADESH - 211002

MISSION

To disseminate and advance knowledge by providing instructional and research facilities in the branches of learning; to make provisions for integrated courses in the humanities, the social sciences, the basic and applied science and technology in the educational programmes of the University; to take appropriate measures for promoting innovations in teaching-learning process, interdisciplinary and professional studies and research, removal of gender disparities and the digital divide, and the application of knowledge to social advancement, national progress and human welfare; and to educate and train human resource for the development of the country.

VISION

The University of Allahabad envisions itself as a global hub of knowledge and academic excellence. Embodied in the emblem of the Banyan tree, the motto ***Quot Rami Tot Arbores*** or **यावत्य: शाखास्तवंतोवृक्षा:** translates as ***As Many Branches, So Many Trees***. The motto inspires us to cultivate diverse academic disciplines, symbolized by the branches, contributing to a vast forest of wisdom. It shapes the young minds to become nation builders of the future. With a steadfast commitment to quality education, research, and cultural richness, the university aims to ascend to the ranks of the world's top-class institutions, fostering innovation and producing leaders who shape the future world, creating an environment where the frontiers of knowledge are explored and reaching out in commitment to enriching the lives of the people.

PURPOSE:

To ensure systematic planning, assessment and continuous improvement of student learning by implementing an effective ***Outcome-Based Education*** (OBE) framework that aligns Course Outcomes (COs) and Programme Outcomes (POs) across all academic programs. These will help to, Standardize the development, delivery, and assessment of COs and POs. Enable continuous monitoring and improvement of academic programs. Support the university's quality assurance and accreditation processes.

TERMINOLOGY

Outcome-Based Education (OBE) is a system where all the parts and aspects of education are focused on the outcomes of the course. The students take up courses with a certain goal of developing skills or gaining knowledge and they have to complete the goal by end of the course.

Programme Outcomes (PO) are statements that describe what the knowledge, skills and attitudes students should have at the time of completion of undergraduate and postgraduate program.

Programme Specific Outcomes (PSO) are outcomes that are specific to a Domain/Specialization. PSOs characterize the specificity of the core courses of a programme.

Course Outcomes (CO) are specific and measurable statements that define the knowledge, skills, and attitudes learners will demonstrate by the completion of a course based on bloom taxonomy.

Learning Outcomes Descriptors (LODs) are measurable statements of the knowledge, skills, and competencies a student should be able to demonstrate after completing a learning process.

Course Articulation Matrix (CAM) is the mapping between Course Outcomes and the Programme Outcomes of a specific Course.

Program Articulation Matrix (PAM) is the mapping between the courses of a Programme with Programme outcomes of a specific programme.

Course Assessment Plan (CAP): A well-planned layout that shows how assessment methods are aligned to the Cos.

Expected Proficiency %: The Expected percentage of scores to attain a particular CO or PO. For ex., if the Expected Proficiency is 60% for CO1 of a course, then 60% of CO1 mark is needed to attain the CO.

Expected Attainment %: The expected percentage of students to get the expected proficiency. For ex., if Expected Attainment is 70% for CO1 of a course, the 70% of students are expected to get the expected proficiency % in CO1.

BLOOM'S LEVEL OF THINKING	1	2	3	4	5	6
	Remember	Understand	Apply	Analyse	Evaluate	Create

SECTION-1: POS ALIGN WITH THE UGC GUIDELINES

LODs & POs for Undergraduate Certificate *(Level 4.5)*

The certificate *(in a field of learning or a disciplinary area)* qualifies students who can apply technical and theoretical concepts and specialized knowledge and skills in a broad range of contexts to undertake skilled or paraprofessional work and/or to pursue further study/learning at higher levels.

Knowledge and understanding: The graduates should be able to demonstrate the acquisition of:	
PO1	knowledge of facts, concepts, principles, theories, and processes in broad multidisciplinary learning contexts within the chosen fields of learning in broad multidisciplinary learning,
PO2	understanding of the linkages between the learning areas within and across the chosen fields of study,
PO3	procedural knowledge required for performing skilled or paraprofessional tasks associated with the chosen fields of learning.
General, technical and professional skills required to perform and accomplish tasks: The graduates should be able to demonstrate the acquisition of:	
PO4	a range of cognitive and technical skills required for accomplishing assigned tasks relating to the chosen fields of learning in the context of broad multidisciplinary contexts.
PO5	cognitive skills required to identify, analyse and synthesize information from a range of sources.
PO6	cognitive and technical skills required for selecting and using relevant methods, tools, and materials to assess the appropriateness of approaches to solving problems associated with the chosen fields of learning.
Application of knowledge and skills: The graduates should be able to demonstrate the ability to:	
PO7	apply the acquired operational or technical and theoretical knowledge, and a range of cognitive and practical skills to select and use basic methods, tools, materials, and information to generate solutions to specific problems relating to the chosen fields of learning.

Generic learning outcomes: The graduates should be able to demonstrate the ability to:	
PO8	listen carefully, read texts related to the chosen fields of study analytically, and present information in a clear and concise manner to different groups/audiences.
PO9	express thoughts and ideas effectively in writing and orally and present the results/findings of the experiments carried out in a clear and concise manner to different groups.
PO10	meet one's own learning needs relating to the chosen fields of learning.
PO11	pursue self-directed and self-managed learning to upgrade the knowledge and skills required for a higher level of education and training.
PO12	gather and interpret relevant quantitative and qualitative data to identify problems,
PO13	critically evaluate principles and theories associated with the chosen fields of learning.
PO14	make judgment and take decisions, based on analysis of data and evidence, for formulating responses to issues/problems associated with the chosen fields of learning, requiring the exercise of some personal responsibility for action and outputs/outcomes.
Constitutional, humanistic, ethical, and moral values: The graduates should be able to demonstrate the willingness to:	
PO15	practice constitutional, humanistic, ethical, and moral values in one's life, and practice these values in real-life situations,
PO16	put forward convincing arguments to respond to the ethical and moral issues associated with the chosen fields of learning.
Employability and job-ready skills, and entrepreneurship skills and capabilities/ qualities and mindset: The graduates should be able to demonstrate the acquisition of:	
PO17	knowledge and a basket of essential skills, required to perform effectively in a defined job relating to the chosen fields of study,
PO18	ability to exercise responsibility for the completion of assigned tasks and for the outputs of own work, and to take some responsibility for group work and output as a member of the group.
Credit requirements	
PO19	The successful completion of the first year (two semesters) of the undergraduate programme of minimum 40 credit hours followed by an exit 4-credit skills-enhancement course,
Entry requirements	
PO20	Certificate obtained after successful completion of Grade 12 or equivalent state of education.
PO21	Admission to the first year of the undergraduate programme will be open to those who have met the entrance requirements, including specified levels of attainment, in the programme admission regulations. Admission will be based on the evaluation of documentary evidence (including the academic record and/or evidence relating to the assessment and validation of prior learning outcomes) of the applicant's ability to pursue an undergraduate programme of study.

LODs & POs for Undergraduate Diploma *(Level 5)*

The diploma *(in a field of learning or a disciplinary area)* qualifies students who can apply specialized knowledge in a range of contexts to undertake advanced skilled or paraprofessional work and/or to pursue further learning/study at higher levels.

Knowledge and understanding: The graduates should be able to demonstrate the acquisition of:	
PO1	theoretical and technical knowledge in broad multidisciplinary contexts within the chosen fields of learning,
PO2	deeper knowledge and understanding of one of the learning areas and its underlying principles and theories,
PO3	procedural knowledge required for performing skilled or paraprofessional tasks associated with the chosen fields of learning.
Skills required to perform and accomplish tasks: The graduates should be able to demonstrate the acquisition of:	
PO4	cognitive and technical skills required for performing and accomplishing complex tasks relating to the chosen fields of learning,
PO5	cognitive and technical skills required to analyse and synthesize ideas and information from a range of sources and act on information to generate solutions to specific problems associated with the chosen fields of learning.
Application of knowledge and skills: The graduates should be able to demonstrate the ability to:	
PO6	apply the acquired specialized or theoretical knowledge, and a range of cognitive and practical skills to gather quantitative and qualitative data,
PO7	select and apply basic methods, tools, materials, and information to formulate solutions to problems related to the chosen field(s) of learning.
Generic learning outcomes: The graduates should be able to demonstrate the ability to:	
PO8	listen carefully, read texts related to the chosen fields of learning analytically, and present complex information in a clear and concise manner to different groups/audiences,
PO9	communicate in writing and orally the information, arguments, and results of the experiments and studies conducted accurately and effectively to specialist and non-specialist audiences.
PO10	meet one's own learning needs relating to the chosen field(s) of learning, work/vocation, and an area of professional practice,
PO11	pursue self-paced and self-directed learning to upgrade knowledge and skills required for pursuing a higher level of education and training.
PO12	critically evaluate the essential theories, policies, and practices by following a scientific approach to knowledge development.
PO13	make judgement and take decision, based on the analysis and evaluation of information, for determining solutions to a variety of unpredictable problems associated with the chosen fields of learning, taking responsibility for the nature and quality of outputs.
Constitutional, humanistic, ethical, and moral values: The graduates should be able to demonstrate the willingness and ability to:	

PO14	embrace the constitutional, humanistic, ethical, and moral values, practice these values in life, and take a position regarding these values,
PO15	formulate arguments in support of actions to address issues relating the ethical and moral issues relating to the chosen fields of learning, including environmental and sustainable development issues, from multiple perspectives.
Employability and job-ready skills, and entrepreneurship skills and capabilities/ qualities and mindset: The graduates should be able to demonstrate the acquisition of knowledge and essential skill sets that are necessary to:	
PO16	take up job/employment relating to the chosen fields of study or professional practice requiring the exercise of full personal responsibility for the completion of tasks and for the outputs of own work, and full responsibility for the group task/ work as a member of the group/team.
PO17	exercise self-management within the guidelines of study and work contexts.
PO18	supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.
Credit requirements	
PO19	The successful completion of the first two years (four semesters) of the undergraduate programme involving a minimum of 80 credit hours followed by an exit 4-credit skills-enhancement course
Entry requirements	
PO20	Continuation of study or lateral entry in the second year of the undergraduate programme will be possible for those who have met the entrance requirements, including specified levels of attainment, specified in the programme regulations. The continuation of the study will be based on the evaluation of documentary evidence (including the academic record and/or evidence relating to the assessment and certification of prior learning) of the applicant's ability to pursue an undergraduate programme of study. Lateral entry into the programme of study at NHEQF level 5 will be based on the validation of prior learning outcomes achieved, including those achieved outside of formal learning or through learning and training in the workplace or in the community, through continuing professional development activities, or through independent/self-directed learning activities

LODs & POs for Bachelor's degree *(Level 5.5)*

The bachelor's degree qualifies students who can apply a broad and coherent body of knowledge and skills in a range of contexts to undertake professional work and/or for further learning.

Knowledge and understanding: The graduates should be able to demonstrate the acquisition of:	
PO1	comprehensive, factual, theoretical, and specialized knowledge in broad multidisciplinary contexts with depth in the underlying principles and theories relating to one or more fields of learning.

PO2	knowledge of the current and emerging issues and developments within the chosen field(s) of learning.
PO3	procedural knowledge required for performing and accomplishing professional tasks associated with the chosen fields of learning.
General, technical and professional skills required to perform and accomplish tasks: The graduates should be able to demonstrate the acquisition of:	
PO4	cognitive and technical skills required for performing and accomplishing complex tasks relating to the chosen fields of learning.
PO5	cognitive and technical skills required to evaluate and analyze complex ideas,
PO6	cognitive and technical skills required to generate solutions to specific problems associated with the chosen fields of learning.
Application of knowledge and skills: The graduates should be able to demonstrate the ability to:	
PO7	apply the acquired specialized technical or theoretical knowledge, and cognitive and practical skills to gather and analyze quantitative/qualitative data to assess the appropriateness of different approaches to solving problems,
PO8	employ the right approach to generate solutions to problems related to the chosen fields of learning.
Generic learning outcomes: The graduates should be able to demonstrate the ability to:	
PO9	listen carefully, to read text related to the chosen fields of learning analytically and present complex information in a clear and concise manner to different groups/audiences.
PO10	communicate in writing and orally the constructs and methodologies adopted for the studies undertaken relating to the chosen fields of learning,
PO11	make coherent arguments to support the findings/results of the study undertaken to specialist and non-specialist audiences.
PO12	meet one's own learning needs relating to the chosen field(s) of learning,
PO13	pursue self-paced and self-directed learning to upgrade knowledge and skills that will help adapt to changing demands of the workplace and pursue higher level of education and training.
PO14	critically evaluate evidence for taking actions to generate solutions to specific problems associated with the chosen fields of learning based on empirical evidence.
PO15	make judgement and take decisions based on the analysis and evaluation of information for formulating responses to problems, including real-life problems,
PO16	exercise judgement across a broad range of functions based on empirical evidence, for determining personal and/or group actions to generate solutions to specific problems associated with the chosen fields of learning.
Constitutional, humanistic, ethical, and moral values: The graduates should be able to demonstrate the willingness and ability to:	
PO17	Embrace constitutional, humanistic, ethical, and moral values, and practice these values in life.
PO18	identify ethical issues related to the chosen fields of study,
PO19	formulate coherent arguments about ethical and moral issues, including environmental and sustainable development issues, from multiple perspectives.

PO20	follow ethical practices in all aspects of research and development, including avoiding unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.
Employability and job-ready skills, and entrepreneurship skills and capabilities/ qualities and mindset: The graduates should be able to demonstrate the acquisition of:	
PO21	knowledge and essential skills set and competence that are necessary to take up a professional job relating to the chosen field of learning and professional practice,
PO22	entrepreneurship skills and mindset required for setting up and running an economic enterprise or pursuing self-employment requiring the exercise of full personal responsibility for the outputs of own work, and full responsibility for the output of the group,
PO23	the ability to exercise management and supervision in the contexts of work or study activities involving unpredictable work processes and working environments.

LODs & POs for Bachelor's degree (Hon./Hon. with Research) or the PG Diploma *(Level 6)*

Bachelor's degree (Honours) prepare individuals who can apply a body of knowledge in a specific context to undertake professional work and for research and further learning.

Bachelor's degree (Honours with Research) prepare individuals who can apply an advanced body of knowledge in a range of contexts to undertake professional work and apply specialized knowledge and skills for research and scholarship, and/or for further learning relating to the chosen field(s) of learning, work/vocation, or professional practice.

Post-Graduate Diploma qualifies students who can apply a body of advanced knowledge and skills in a range of contexts to undertake professional or highly skilled work and/or further learning.

Knowledge and understanding: The graduates should be able to demonstrate the acquisition of:	
PO1	advanced knowledge about a specialized field of enquiry, with depth in one or more fields of learning within a broad multidisciplinary/ interdisciplinary context.
PO2	a coherent understanding of the established methods and techniques of research and enquiry applicable to the chosen fields of learning.
PO3	an awareness and knowledge of the emerging developments and issues in the chosen fields of learning,
PO4	procedural knowledge required for performing and accomplishing professional tasks associated with the chosen fields of learning.
General, technical and professional skills required to perform and accomplish tasks: The graduates should be able to demonstrate the acquisition of:	
PO5	a range of cognitive and technical skills required for performing and accomplishing complex tasks relating to the chosen fields of learning,
PO6	cognitive and technical skills relating to the established research methods and techniques,
PO7	cognitive and technical skills required to evaluate complex ideas and undertake research and investigations to generate solutions to real-life problems,

PO8	generate solutions to complex problems independently, requiring the exercise of full personal judgement, responsibility, and accountability for the output of the initiatives taken as a practitioner.
Application of knowledge and skills: The graduates should be able to demonstrate the ability to:	
PO9	apply the acquired advanced technical and/or theoretical knowledge and a range of cognitive and practical skills to analyze the quantitative and qualitative data gathered drawing on a wide range of sources for identifying problems and issues relating to the chosen fields of learning,
PO10	apply advanced knowledge relating to research methods to carry out research and investigations to formulate evidence-based solutions to complex and unpredictable problems.
Generic learning outcomes: The graduates should be able to demonstrate the ability to:	
PO11	listen carefully, read texts and research papers analytically, and present complex information in a clear and concise manner to different groups/ audiences,
PO12	communicate technical information and explanations, and the findings/ results of the research studies relating to specialized fields of learning,
PO13	present in a concise manner one's views on the relevance and applications of the findings of research and evaluation studies in the context of emerging developments and issues.
PO14	meet own learning needs relating to the chosen fields of learning,
PO15	pursue self-paced and self-directed learning to upgrade knowledge and skills that will help accomplish complex tasks and pursue a higher level of education and research.
The graduates should be able to demonstrate:	
PO16	a keen sense of observation, enquiry, and capability for asking relevant/ appropriate questions,
PO17	the ability to problematize, synthesize and articulate issues and design research proposals,
PO18	the ability to define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect relationships,
PO19	the capacity to develop appropriate tools for data collection,
PO20	the ability to plan, execute and report the results of an experiment or investigation,
PO21	the ability to acquire the understanding of basic research ethics and skills in practicing/doing ethics in the field/ in own research work, regardless of the funding authority or field of study,
PO22	examine and assess the implications and consequences of emerging developments and issues relating to the chosen fields of study based on empirical evidence.
PO23	make judgement in a range of situations by critically reviewing and consolidating evidence,
PO24	exercise judgement based on evaluation of evidence from a range of sources to generate solutions to complex problems, including real-life problems, associated with the chosen field(s) of learning requiring the exercise of full personal responsibility and

	accountability for the initiatives undertaken and the outputs/outcomes of own work as well as of the group as a team member.
Constitutional, humanistic, ethical, and moral values: The graduates should be able to demonstrate the willingness and ability to:	
PO25	Embrace and practice constitutional, humanistic, ethical, and moral values in life.
PO26	adopt objective, unbiased, and truthful actions in all aspects of work related to the chosen field(s) of learning and professional practice.
PO27	present coherent arguments in support of relevant ethical and moral issues.
PO28	participate in actions to address environmental and sustainable development issues.
PO29	follow ethical practices in all aspects of research and development, including avoiding unethical practices such as fabrication, falsification, or misrepresentation of data or committing plagiarism.
Employability and job-ready skills, and entrepreneurship skills and capabilities/ qualities and mindset: The graduates should be able to demonstrate the acquisition of knowledge and skill sets required for:	
PO30	adapting to the future of work and to the demands of the fast pace oftechnological developments and innovations that drive a shift in employers' demands for skills, particularly with respect to the transition towards more technology-assisted work involving the creation of new forms of work and rapidly changing work and production processes.
PO31	managing complex technical or professional activities or projects, requiring the exercise of full personal responsibility for the output of own work as well as for the outputs of the group as a member of the group/team.
PO32	exercising supervision in the context of work having unpredictable changes.
Credit requirements	Successful completion of the 4-year (eight semesters) undergraduate programme involving a minimum of 160 credits, with a minimum of 40 credits each at level 4.5, 5, 5.5, and 6 of the NHEQF. A 1-year/2-semester Post-Graduate Diploma programme builds on a 3-year/6-semester bachelor's degree and requires a minimum of 40 credits for individuals who have completed a Bachelor's programme.
Entry requirements	An individual seeking admission to the bachelor's degree (Honours/ Honours with Research) in a specified field of learning would normally have completed all requirements of the relevant 3-year Bachelor's degree. (After completing the requirements of a 3-year bachelor's degree, candidates who meet a minimum 75% marks or its equivalent grade will be allowed to continue studies in the fourth year of the undergraduate programme leading to the bachelor's degree (Honours with Research).
	Continuation of undergraduate programme leading to the bachelor's degree (Honours/ Honours with Research) will be open to those who have met the entrance requirements, including specified levels of attainment, in the programme admission regulations. Continuation of the programme of study will be based on the evaluation of documentary evidence (including the academic record and/or evidence relating to the assessment and certification of prior learning) of the applicant's ability to pursue study during the fourth year (semesters 7 & 8) of the 4-year Bachelor's degree (Honours/ Honours with

	Research) programme. Lateral entry into the programme of study at NHEQF level 6 will be based on the validation of prior learning outcomes, including those achieved outside of formal learning or through learning and training in the workplace, through continuing professional development activities, or through independent/self-directed/self-managed learning activities.

LODs & POs for Master's Degree (e.g. M.A., M.Com., M.Sc., etc.) *(Level 6.5)*

Master's degree (1 year/2 semesters of study): The Master's degree qualifies students who can apply an advanced body of knowledge in a range of contexts for professional practice, research, and scholarship and as a pathway for further learning. Graduates at this level are expected to possess and demonstrate specialized knowledge and skills for research, and/or professional practice and/or for further learning.

Master's Degree (2 years/4 semesters of study): The Master's degree qualifies students who can apply an advanced body of knowledge in a range of contexts for professional practice, research, and scholarship and as a pathway for further learning. Graduates at this level are expected to possess and demonstrate specialized knowledge and skills for research, and/or professional practice and/or for further learning. Master's degree holders are expected to demonstrate the ability to apply the established principles and theories to a body of knowledge or an area of professional practice.

Knowledge and understanding: The graduates should be able to demonstrate the acquisition of:	
PO1	advanced knowledge about a specialized field of enquiry with a critical understanding of the emerging developments and issues relating to one or more fields of learning,
PO2	advanced knowledge and understanding of the research principles, methods, and techniques applicable to the chosen field(s) of learning or professional practice,
PO3	procedural knowledge required for performing and accomplishing complex and specialized and professional tasks relating to teaching, and research and development.
General, technical and professional skills required to perform and accomplish tasks: The graduates should be able to demonstrate the acquisition of:	
PO4	advanced cognitive and technical skills required for performing and accomplishing complex tasks related to the chosen fields of learning.
PO5	advanced cognitive and technical skills required for evaluating research findings and designing and conducting relevant research that contributes to the generation of new knowledge.
PO6	specialized cognitive and technical skills relating to a body of knowledge and practice to analyze and synthesize complex information and problems.
Application of knowledge and skills: The graduates should be able to demonstrate the ability to:	
PO7	apply the acquired advanced theoretical and/or technical knowledge about a specialized field of enquiry or professional practice and a range of cognitive and practical skills to identify and analyze problems and issues, including real-life problems, associated with the chosen fields of learning.
PO8	apply advanced knowledge relating to research methods to carry out research and investigations to formulate evidence-based solutions to complex and unpredictable problems.
Generic learning outcomes: The graduates should be able to demonstrate the ability to:	

PO9	listen carefully, read texts and research papers analytically and present complex information in a clear and concise manner to different groups/audiences,
PO10	communicate, in a well-structured manner, technical information and explanations, and the findings/results of the research studies undertaken in the chosen field of study,
PO11	present in a concise manner view on the relevance and applications of the findings of recent research and evaluation studies in the context of emerging developments and issues.
PO12	evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints.
PO13	meet one's own learning needs relating to the chosen fields of learning, work/vocation, and an area of professional practice,
PO14	pursue self-paced and self-directed learning to upgrade knowledge and skills, including research-related skills, required to pursue a higher level of education and research.
PO15	problematize, synthesize, and articulate issues and design research proposals,
PO16	define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect relationships,
PO17	develop appropriate tools for data collection for research,
PO18	the ability to use appropriate statistical and other analytical tools and techniques for the analysis of data collected for research and evaluation studies,
PO19	plan, execute, and report the results of an investigation,
PO20	follow basic research ethics and skills in practicing/doing ethics in thefield/ in one's own research work.
PO21	make judgements and take decisions regarding the adoption of approaches to solving problems, including real-life problems, based on the analysis and evaluation of information and empirical evidence collected.
PO22	make judgement across a range of functions requiring the exercise of full responsibility and accountability for personal and/or group actions to generate solutions to specific problems associated with the chosen fields/subfields of study, work, or professional practice.
Constitutional, humanistic, ethical, and moral values: The graduates should be able to demonstrate the willingness and ability to:	
PO23	embrace and practice constitutional, humanistic, ethical, and moral values in one's life,
PO24	adopt objective and unbiased actions in all aspects of work related tothe chosen fields/subfields of study and professional practice,
PO25	participate in actions to address environmental protection and sustainable development issues,
PO26	support relevant ethical and moral issues by formulating and presenting coherent arguments,

PO27	follow ethical principles and practices in all aspects of research and development, including inducements for enrolling participants, avoiding unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.
Employability and job-ready skills, and entrepreneurship skills and capabilities/ qualities and mindset: The graduates should be able to demonstrate the acquisition of knowledge and skill sets required for:	
PO28	adapting to the future of work and responding to the demands ofthe fast pace of technological developments and innovations that drive the shift in employers' demands for skills, particularly with respect to t h e transition towards more technology-assisted work involving the creation of new forms of work and rapidly changing work and production processes.
PO29	exercising full personal responsibility for the output of own work as well as for group/team outputs and for managing work that is complex and unpredictable requiring new strategic approaches.

LODs & POs for Master's Degree (e.g. M.E./M.Tech. etc.) ***(Level 6.5)***

Master's degree (1 year/2 semesters of study): The Master's degree qualifies students who can apply an advanced body of knowledge in a range of contexts for professional practice, research, and scholarship and as a pathway for further learning. Graduates at this level are expected to possess and demonstrate specialized knowledge and skills for research, and/or professional practice and/or for further learning.

Master's Degree (2 years /4 semesters of study): The Master's degree qualifies students who can apply an advanced body of knowledge in a range of contexts for professional practice, research, and scholarship and as a pathway for further learning. Graduates at this level are expected to possess and demonstrate specialized knowledge and skills for research, and/or professional practice and/or for further learning. Master's degree holders are expected to demonstrate the ability to apply the established principles and theories to a body of knowledge or an area of professional practice.

Knowledge and understanding: The graduates should be able to demonstrate the acquisition of:	
PO1	advanced knowledge about a specialized field of enquiry with a critical understanding of the emerging developments and issues relating to one or more fields of learning,
PO2	advanced knowledge and understanding of the research principles, methods, and techniques applicable to the chosen field(s) of learning or professional practice,
PO3	procedural knowledge required for performing and accomplishing complex and specialized and professional tasks relating to teaching, and research and development.
General, technical and professional skills required to perform and accomplish tasks: The graduates should be able to demonstrate the acquisition of:	
PO4	advanced cognitive and technical skills required for performing and accomplishing complex tasks related to the chosen fields of learning.
PO5	advanced cognitive and technical skills required for evaluating research findings and designing and conducting relevant research that contributes to the generation of new knowledge.

PO6	specialized cognitive and technical skills relating to a body of knowledge and practice to analyze and synthesize complex information and problems.
Application of knowledge and skills: The graduates should be able to demonstrate the ability to:	
PO7	apply the acquired advanced theoretical and/or technical knowledge about a specialized field of enquiry or professional practice and a range of cognitive and practical skills to identify and analyze problems and issues, including real-life problems, associated with the chosen fields of learning.
PO8	apply advanced knowledge relating to research methods to carry out research and investigations to formulate evidence-based solutions to complex and unpredictable problems.
Generic learning outcomes: The graduates should be able to demonstrate the ability to:	
PO9	listen carefully, read texts and research papers analytically, and present complex information in a clear and concise manner to different groups/audiences,
PO10	communicate, in a well-structured manner, technical information and explanations, and the findings/results of the research studies undertaken in the chosen field of study,
PO11	present in a concise manner view on the relevance and applications of the findings of recent research and evaluation studies in the context of emerging developments and issues.
PO12	evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints.
PO13	meet one's own learning needs relating to the chosen fields of learning, work/vocation, and an area of professional practice,
PO14	pursue self-paced and self-directed learning to upgrade knowledge and skills, including research-related skills, required to pursue higher level of education and research.
PO15	problematize, synthesize, and articulate issues and design research proposals,
PO16	define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect relationships,
PO17	develop appropriate tools for data collection for research,
PO18	the ability to use appropriate statistical and other analytical tools and techniques for the analysis of data collected for research and evaluation studies,
PO19	plan, execute, and report the results of an investigation,
PO20	follow basic research ethics and skills in practicing/doing ethics in the field/ in one's own research work.
PO21	make judgements and take decisions regarding the adoption of approaches to solving problems, including real-life problems, based on the analysis and evaluation of information and empirical evidence collected.
PO22	make judgement across a range of functions requiring the exercise of full responsibility and accountability for personal and/or group actions to generate solutions to specific

	problems associated with the chosen fields/subfields of study, work, or professional practice.
Constitutional, humanistic, ethical, and moral values: The graduates should be able to demonstrate the willingness and ability to:	
PO23	embrace and practice constitutional, humanistic, ethical, and moral values in one's life,
PO24	adopt objective and unbiased actions in all aspects of work related tothe chosen fields/subfields of study and professional practice,
PO25	participate in actions to address environmental protection and sustainable development issues,
PO26	support relevant ethical and moral issues by formulating and presenting coherent arguments,
PO27	follow ethical principles and practices in all aspects of research and development, including inducements for enrolling participants, avoiding unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.
Employability and job-ready skills, and entrepreneurship skills and capabilities/ qualities and mindset: The graduates should be able to demonstrate the acquisition of knowledge and skills set required for:	
PO28	adapting to the future of work and responding to the demands of the fast pace of technological developments and innovations that drive shift in employers' demands for skills, particularly with respect to t h e transition towards more technology-assisted work involving the creation of new forms of work and rapidly changing work and production processes.
PO29	exercising full personal responsibility for the output of own work as well as for group/team outputs and for managing work that are complex and unpredictable requiring new strategic approaches.

LODs & POs for Doctoral Degree *(Level 8)*

Doctoral Degree: The Doctoral degree qualifies students who can ask relevant and new questions and develop appropriate methodologies and tools for collecting information in pursuit of generating new knowledge and new data sets; and apply a substantial body of knowledge to undertake research and investigations to generate new knowledge, in one or more fields of inquiry, scholarship or professional practice. Graduates at this level is expected to have a systematic and critical understanding of a complex field of learning and specialized research skills for the advancement of knowledge and/or professional practice and making a significant and original contribution to the creation of new knowledge relating to a field of learning or in the context of an area of professional practice.

Knowledge and understanding: The graduates should be able to demonstrate the acquisition of:	
PO1	highly specialized knowledge, including knowledge at the most advanced frontiers of the chosen fields of study.
PO2	mastery of the established research methods and techniques applicable to the chosen fields of learning.

PO3	procedural knowledge required by personnel engaged in complex research and development activities.
General, technical and professional skills required to perform and accomplish tasks: The graduates should be able to demonstrate the acquisition of:	
PO4	most advanced and highly specialized cognitive and technical skills required for performing and accomplishing complex tasks related to research and development that make original contributions to knowledge, professional practice, and innovations.
PO5	cognitive and technical skills required for conceptualizing, designing, and implementing fundamental and/or applied research at the forefront of the chosen field(s) of learning to generate original knowledge.
PO6	cognitive and technical skills required for doing transdisciplinary research.
Application of knowledge and skills: The graduates should be able to demonstrate the ability to:	
PO7	apply the acquired highly specialized knowledge, skills, and methods of research to design and conduct original and high quality disciplinary or multidisciplinary or interdisciplinary research to generate evidence-based solutions to complex problems, including real-life problems, relating to the chosen field(s) of study.
Generic learning outcomes: The graduates should be able to demonstrate the ability to:	
PO8	listen carefully, read texts and research papers analytically, and present complex information in a clear and concise manner to non-specialist and specialist groups/audiences.
PO9	present, in a well-structured and logical manner, technical information and explanations pertaining to the results/findings of research studies undertaken.
PO10	present views on the relevance and application of recent research and their applications in the context of the emerging developments and issues related to the chosen field(s) of study or professional practice.
PO11	meet own learning needs relating to research and investigations in the chosen fields of study.
PO12	pursue self-paced and self-directed learning to upgrade knowledge and skills, including research-related skills, required to pursue higher level of research related to new frontiers of knowledge.
PO13	critically analyze and synthesize a body of knowledge in their major and allied fields, identify critical gaps and ask new questions, develop new tools and techniques of data gathering and analysis, and at the end of it be able to conduct research independently.
PO14	evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples and addressing opposing viewpoints.
PO15	make judgements and take decisions regarding the formulation of responses to problems, including real-life problems, based on the analysis and evaluation of information and empirical evidence relating to the problems.
PO16	make significant judgment across a broad range of functions requiring the exercise of responsibility for determining personal and/or group actions to generate solutions to

	specific problems associated with the chosen field(s) of study, work/vocation, or professional practice.
Constitutional, humanistic, ethical, and moral values: The graduates should be able to demonstrate the willingness and ability to:	
PO17	practice constitutional, humanistic, ethical, and moral values in life, adopt objective and unbiased actions in all aspects of work,
PO18	identify ethical issues related to the chosen fields of research, including those relating to environmental and sustainable development issues,
PO19	follow ethical practices in all aspects of research and development, including avoiding practices such as fabrication, falsification or misrepresentation of data or committing plagiarism, and not adhering to intellectual property rights,
PO20	acquire the understanding of basic research ethics and skills in practicing/doing ethics in the field/in own research work, regardless of the funding authority or field of study.
Employability and job-ready skills, and entrepreneurship skills and capabilities/ qualities and mindset: The graduates should be able to demonstrate the acquisition of knowledge and essential skill sets required for:	
PO21	adapting to the future of work and responding to the demands of the fast pace of technological developments and innovations that drive shift in skill needs relating to work and professional practices, including those relating to teaching, research, and development,
PO22	exercising full personal responsibility for outputs/outcomes of own work and outputs/outcomes of group efforts,
PO23	exercising substantial authority, innovation, autonomy, professional integrity, and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research.

LEVEL OF CORRELATION AND ATTAINMENT

Level of Correlation/Mapping Factor indicates to what extent a certain component mapped with the other. The correlation between CO and PO describes the level at which a particular PO is addressed through a CO:

03 indicates **Substantial/High** mapping *(high correlation towards attainment)*

02 indicates **Moderate** mapping *(moderate correlation towards attainment)*

01 indicates **Low** mapping *(low correlation towards attainment)*

CO Attainment Targets

Targets are quantized into certain levels, 3 being the most common number of levels. CO Attainment targets are finalized by the course coordinator before commencing course delivery in a semester. For Example, we can set a target as below:

Level 3: x% Students scoring >= p% of max marks allocated to CO

Level 2: y% Students scoring >= p% of max marks allocated to CO

Level 1: z% Students scoring >= p% of max marks allocated to CO

p% → The expected Proficiency % to attain a CO. For ex. It can be 60%

x% → The High expected Attainment %. For ex., it can be set as 85%

y% → The moderate expected attainment %. For ex., it can be set as 70%

z% → The low expected attainment %. For ex., it can be set as 60%

ATTAINMENT OF COs

Attainment of COs can be measured directly and indirectly

Direct attainment of COs can be determined from the performance of students in all relevant assessment instruments.

Direct CO attainment

- Direct attainment of COs is determined from the performances of students in Continuous Internal Assessment (CIA) and Semester End Examination (SEE).
- The proportional weightages of CIA: SEE will be as per the academic regulations in force.
- Direct attainment of a specific COs is determined from the performances of students in all the assessment items related to that particular CO.
- Hence, every assessment item needs to be tagged with the relevant CO.
- Also, we need data about performance of students' assessment item – wise.
- Continuous Internal Assessment (CIA) is conducted and evaluated by the relevant department itself. Thus, institution have access to question-wise marks in all assessment instruments in Continuous Internal Assessment (CIA).
- When questions are tagged with relevant COs, the department has access to performances of students with respect to each CO.
- For the Semester End Examinations, the direct attainment is calculated from the final mark for all COs.

Indirect CO attainment

- Indirect attainment of COs can be determined from the course exit survey.
- The exit survey form should be designed to get feedback from students on all the COs.

GAP ANALYSIS

If targets are achieved for that year, higher targets can be set (increase the target by 2% to 5%) for the following academic year as a part of continuous improvement.

If targets are not achieved, an action plan should be performed to attain the target in the subsequent years.

CALCULATION OF CO ATTAINMENT

Step 1: For every course, 4-6 course outcomes (CO) are defined and mapped to Program outcomes (PO) on a scale of 0 to 3. The average of each POs is calculated. CO attainment targets are finalized by the course coordinators before commencement of the course delivery.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
CO1	3	-	3	-	-	-	-	-	-	2	-	-
CO2	2	1	3	-	-	-	-	-	-	-	2	-
CO3	3	2	2	-	-	-	-	-	-	2	-	-
CO4	3	2	2	-	-	-	-	-	-	-	2	-
CO5	3	-	2	2	-	-	-	-	-	2	-	-
Average	2.80	1.67	2.40	2.00	-	-	-	-	-	2.00	2.00	-

Step 2: For every CIA, Enter maximum marks for each question and its corresponding CO in the relevant columns

				M.Ed. I Sem															
				Curriculum Studies															
Sl.No.	Roll No.	Name	End Semester																
			Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q16	Q17	Q18
		Max. Marks	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		CO	CO1	CO1	CO2	CO2	CO3	CO3	CO4	CO4	CO5	CO5	CO1	CO1	CO2	CO3	CO4	CO5	CO5
1	23075101	Abhay Kumar Pandey	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	2.00	2.00	6.00	2.50		9.00	7.00	7.00	10.00
2	23075102	Abhishek Pandey	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00	4.00	2.00	0.00	0.00	
3	23075103	Adarsh Sharma	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	6.00	10.00	7.00		6.00		7.00
4	23075104	Akansha Chaurasia	2.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	0.00		3.00	2.00	0.00		4.00
5	23075105	Anil Prajapati	2.00	1.00	2.00	2.00	2.00	0.00	0.00	0.00	1.00	2.00	4.00	4.00	6.00		3.00		10.00
6	23075106	Anjali Devi	2.00	0.00	2.00	2.00	0.00	0.00	2.00	1.00	0.00	2.00	8.00	10.00	6.00	10.00			10.00
7	23075107	Anurama Mishra	2.00	0.00	2.00	2.00	2.00	0.00	0.00	1.00	2.00	0.00	7.00		6.00	10.00	0.00		8.00

Max. Marks for each Question Marks earned by student CO for each Question

Step 3: Enter mark for each student question-wise. Mark zero (0) if the student failed to answer for mandatory questions. Leave blank only for choice questions. We find the total mark of the students in last column.

Step 4: Compute the "Number of students attempted" the questions for each question.

For ex. Content of cell D72 = COUNTA (D8:D71)

Here, Column D represent the marks earned by the students for Q.No.1

			M.Ed. I Sem																
			Curriculum Studies																
Sl.No.	Roll No.	Name	End Semester																
			Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q16	Q17	Q18
		Max. Marks	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		CO	CO1	CO1	CO2	CO2	CO3	CO3	CO4	CO4	CO5	CO5	CO1	CO1	CO2	CO3	CO4	CO5	CO5
49	23075152	Shilpa Singh	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	2.00		7.00		6.00	10.00	6.00		7.00
50	23075153	Shipra Shukla		1.00		2.00	2.00	0.00		2.00	2.00	0.00	7.00	6.00	9.00			2.00	8.00
51	23075154	Shivam Maddheshiya	2.00	0.00	0.00	0.00	0.00		0.00	1.00	1.00	0.00	7.00	6.00	6.00			2.00	2.00
		No. of Students who attempted	44.00	36.00	41.00	44.00	46.00	45.00	41.00	44.00	45.00	43.00	44.00	42.00	43.00	28.00	29.00	18.00	46.00
		No. of Students who secured more	44.00	18.00	24.00	37.00	35.00	24.00	6.00	30.00	34.00	26.00	29.00	24.00	26.00	16.00	19.00	10.00	42.00
		Percentage of Students who secure	88%	36%	48%	74%	70%	48%	12%	60%	68%	52%	58%	48%	52%	32%	38%	20%	84%
		Average Percentage of Students wh	62%		61%		59%		36%		60%		53%		52%	32%	38%	52%	
		CO Attainment Level	1.00		1.00		0.00		0.00		1.00		0.00		0.00	0.00	0.00	0.00	
			CO1		CO2		CO3		CO4		CO5		CO1		CO2	CO3	CO4	CO5	

Step 5: Compute the "Number of students who score >= p% marks" for each question.

For ex. Content of cell D73 = COUNTIF (D8:D71,">="&0.6*D4)

Here, we compute the numbers of students who scores >=60% for Q.No.1

Step 6: Find the Percentage of students who scores >=p% for each question

Percentage of students who got more than p% of marks = $\frac{\text{No.of students who got more than p\% of marks}}{No.of\ students\ attempted\ the\ Question}$

Step 7: Compute the average percentage of students who got more than p% of marks for each CO.

			M.Ed. I Sem																
			Curriculum Studies																
Sl.No.	Roll No.	Name	End Semester																
			Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q16	Q17	Q18
		Max. Marks	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
		CO	CO1	CO1	CO2	CO2	CO3	CO3	CO4	CO4	CO5	CO5	CO1	CO1	CO2	CO3	CO4	CO5	CO5
49	23075152	Shilpa Singh	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	2.00		7.00		6.00	10.00	6.00		7.00
50	23075153	Shipra Shukla		1.00		2.00	2.00	0.00		2.00	2.00	0.00	7.00	6.00	9.00			2.00	8.00
51	23075154	Shivam Maddheshiya	2.00	0.00	0.00	0.00	0.00		0.00	1.00	1.00	0.00	7.00	6.00	6.00			2.00	2.00
		No. of Students who attempted	44.00	36.00	41.00	44.00	46.00	45.00	41.00	44.00	45.00	43.00	44.00	42.00	43.00	28.00	29.00	18.00	46.00
		No. of Students who secured more	44.00	18.00	24.00	37.00	35.00	24.00	6.00	30.00	34.00	26.00	29.00	24.00	26.00	16.00	19.00	10.00	42.00
		Percentage of Students who secure	88%	36%	48%	74%	70%	48%	12%	60%	68%	52%	58%	48%	52%	32%	38%	20%	84%
		Average Percentage of Students wh	62%		61%		59%		36%		60%		53%		52%	32%	38%	52%	
		CO Attainment Level	1.00		1.00		0.00		0.00		1.00		0.00		0.00	0.00	0.00	0.00	
			CO1		CO2		CO3		CO4		CO5		CO1		CO2	CO3	CO4	CO5	

Step 8: Compute the CO attainment for each CIA using the following formula.

CO Attainment Level = 3, if (the avg. % of students who got >=p% for each CO) >=x

= 2, if (the avg. % of students who got >=p% for each CO) >=y

= 1, if (the avg. % of students who got >=p% for each CO) >=z

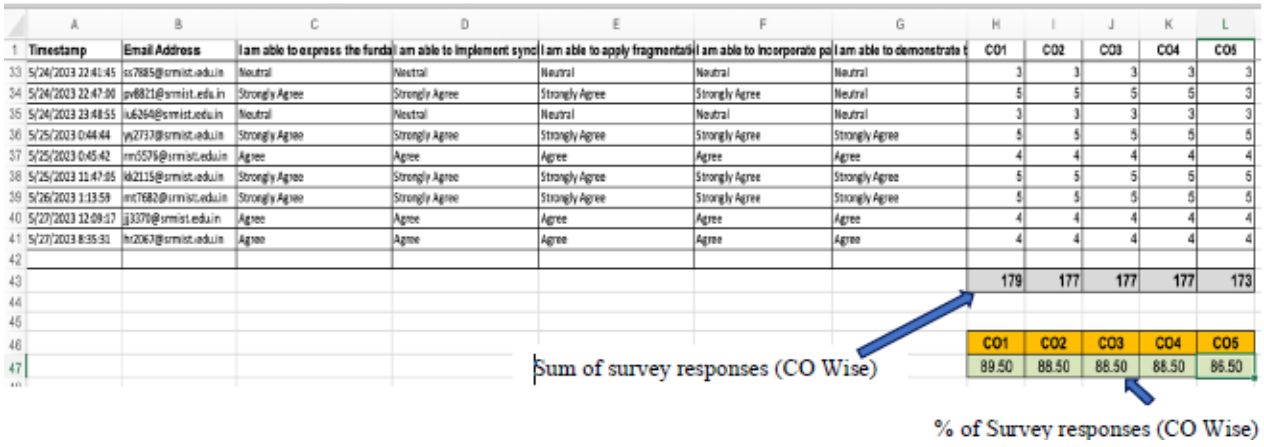
Step 9: Repeat steps 2 to 8 for each CIA components. Use separate sheet for each CIA

Step 10: Enter the Grades earned by the students in Semester End Examinations. Calculate its corresponding numeric grades in the next column. For example, Grade "O" will be converted as 10 in numeric. Also compute the percentage of students who got more than 60% of marks in Semester End Examinations.

Step 11: Course Exit Survey will be conducted among students for Indirect CO attainment. The exit survey feedback must include questionnaire for all COs.

Step 12: Convert the exit survey responses into its numerical equivalent and compute the percentage of each CO values.

Survey Responses	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Numerical Equivalent	5	4	3	2	1



	A	B	C	D	E	F	G	H	I	J	K	L
1	Timestamp	Email Address	I am able to express the funda	I am able to implement sync	I am able to apply fragmentati	I am able to incorporate pa	I am able to demonstrate t	CO1	CO2	CO3	CO4	CO5
33	5/24/2023 22:41:45	ss7685@srmist.edu.in	Neutral	Neutral	Neutral	Neutral	Neutral	3	3	3	3	3
34	5/24/2023 22:47:00	pv8821@srmist.edu.in	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Neutral	5	5	5	5	3
35	5/24/2023 23:48:55	ul6264@srmist.edu.in	Neutral	Neutral	Neutral	Neutral	Neutral	3	3	3	3	3
36	5/25/2023 0:44:44	vy2737@srmist.edu.in	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	5	5	5	5	5
37	5/25/2023 0:45:42	nn0576@srmist.edu.in	Agree	Agree	Agree	Agree	Agree	4	4	4	4	4
38	5/25/2023 11:47:05	kk2115@srmist.edu.in	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	5	5	5	5	5
39	5/26/2023 1:13:59	mt7682@srmist.edu.in	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	5	5	5	5	5
40	5/27/2023 12:09:17	jj3370@srmist.edu.in	Agree	Agree	Agree	Agree	Agree	4	4	4	4	4
41	5/27/2023 8:35:31	hr2067@srmist.edu.in	Agree	Agree	Agree	Agree	Agree	4	4	4	4	4
42												
43								179	177	177	177	173
46												
46								CO1	CO2	CO3	CO4	CO5
47								89.50	88.50	88.50	88.50	86.50

Sum of survey responses (CO Wise)

% of Survey responses (CO Wise)

Step 13: Calculate Consolidated Continuous Internal Assessment (CIA) for each CO as follows:

Sum of survey responses (CO Wise)

% of Survey responses (CO Wise)

Avg. % of students who got >= p% of marks Avg. % of students who got >= p% of marks

in all CIA components for theory assessment + in all CIA components for theory assessment

$$\text{CIA} = \frac{Avg.\%\ of\ students\ who\ got \geq p\%\ of\ marks\ in\ all\ CIA\ components\ for\ theory\ assessment}{2} + \frac{Avg.\%\ of\ students\ who\ got \geq p\%\ of\ marks\ in\ all\ CIA\ components\ for\ theory\ assessment}{2}$$

Step 14: Calculate CO Attainment Level for CIA as follows:

Attainment Level for Continuous Internal Assessment (CIA) = 3 if CIA >= x%

= 2 if y% <= CIA < x%

= 1 if z% <= CIA < y%

Step 15: "Percentage of students who got more than 6% of marks in Semester End Examination" will be considered as SEE (Semester End Examination) for all COs.

Now Calculate CO Attainment Level for SEE as in step 14.

Step 16: Direct CO Attainment score is calculated as follows:

Direct Attainment Score = 50% of CIA + 50% of SEE

Direct Attainment Level is calculated from Direct Attainment Score as follows:

Direct attainment level = 3, if direct Attainment Score >= x%

= 2 if y% <= direct Attainment Score < x%

= 1 if z% <= direct Attainment Score < y%

Step 17: Indirect Attainment Score is the "% of Exit survey responses" that we have

calculated in step 12.

Now calculate the indirect attainment level from indirect attainment score as same as in step no. 16

Step 18: Final Attainment score is calculated as follows:

Final Attainment Score = 70% of Direct Attainment Score+ 30% of Indirect Attainment Score

Final Attainment Level is calculated from final attainment score as follows:

Final attainment level = 3, if final Attainment Score >= x%

= 2 if y% <= final Attainment Score < x%

= 1 if z% <= final Attainment Score < y%

CALCULATION OF PO/PSO ATTAINMENT

Step 1: To calculate PO attainment, we refer the following values.

(i) Final Attainment Level of COs [Refer Step 18 in the previous section]

(ii) CO-PO mapping correlations. [Refer Step 1 in the previous section]

(iii) Maximum Correlation Value. ie; 3

CO	PO1	PO2	PO3	PO4
CO 1	3	-	3	-
CO 2	2	1	3	-
CO 3	3	2	2	-
CO 4	3	2	2	-
CO 5	3	-	2	2
Average	2.80	1.67	2.40	2.00

Step 2 : The PO attainment for each CO is calculated as follows:

PO/PSO Attainment = [Final CO Attainment Level/ Max. Correlation Value] * CO-PO Mapping Correlation value

i.e, Final Attainment for CO1 is 2.65, CO1-PO1 mapping is 3, So the PO1 attainment w.r.to

CO1 is = [2.65 /3] * 3 = 2.65

CO	PO1	PO2	PO3	PO4
CO 1	2.56	-	2.56	-
CO 2	2.00	1.00	3.00	-
CO 3	3.00	2.00	2.00	-
CO 4	2.65	1.77	1.77	-
CO 5	2.65	-	1.77	1.77
Average	2.59	1.59	2.24	1.77

Step 3: Repeat the calculation for all POs/PSOs

Step 4: Compute the average PO attainment for each POs/PSOs

PROGRAMME LEVEL PO/PSO ATTAINMENT

The PO attainments of all the core courses are listed and the average PO attainments are calculated. Then the average PO attainments are compared with the target PO to check whether the POs are attained at programme level or not.

Direct Attainment
PO attainments of all the core courses are listed in the above table and its average is computed. So Direct attainment is the average PO attainment of all the courses of a programme.

Indirect Attainment
Programme exit survey and alumni survey will be conducted similar to course exit survey. These survey questionnaires will verify the attainment of all POs of a programme.

Final Attainment
80% of direct attainment and 20% of indirect attainments are added to find the final PO attainment of a programme.

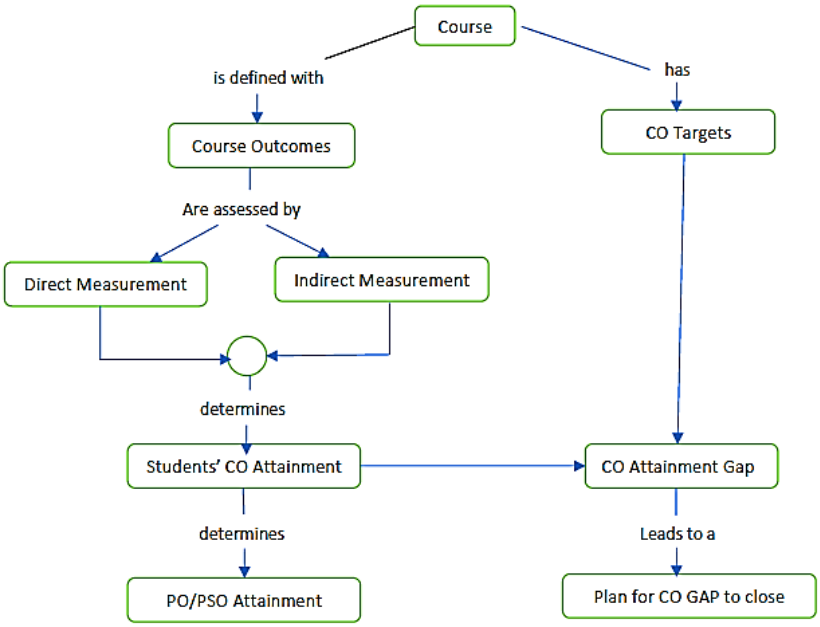
CO ATTAINMENT AND GAP ANALYSIS

The CO attainment for each course will be compared with CO attainment target and the CO gaps can be closed by either enhancing the CO target or by enhancing the Teaching Learning process. Every course of a programme is defined with respect to course outcomes and each course coordinator will define a CO attainment target at the beginning of a course delivery (i.e, at the beginning of a semester).

Course outcomes are measured by direct methods like Continuous Internal Assessments (CIAs) and the CO will be measured indirectly through course exit survey at the end of the semester.

CO attainment of individual sections will be added and the average CO attainment of a course will be calculated by the course coordinators.

This CO attainment level is compared with CO target to check whether the students attained the target or not. If any CO is not attained, the course coordinator may suggest his plan to attain the CO in future. CO target may be redefined if needed.

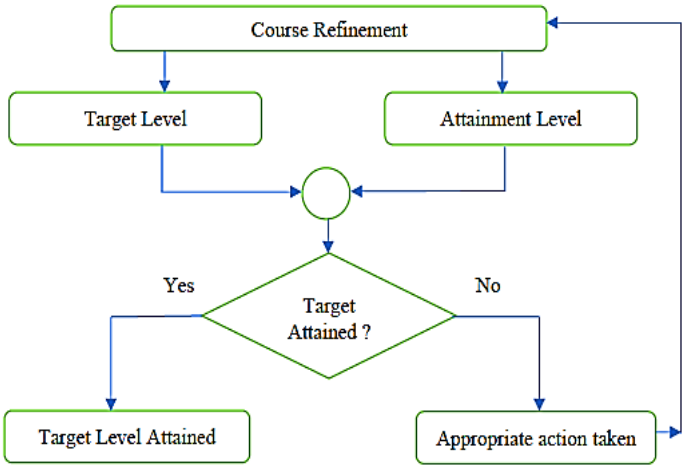


CONTINUOUS IMPROVEMENT IN PO/PSO ATTAINMENT

Based on the PO/PSO Attainment for a course, we take appropriate action to refine the course if target is not achieved. Also, we can suggest to refine the PO/PSO attainment target in future.

Every Faculty member needs to compute two main attainment values as mentioned below. Based on that if target is not attained then appropriate actions should be taken.

- CO attainment
- PO attainment with reference to CO



Course audit professor will analysis the PO/PSO attainment section-wise and recommends for further actions.

STEPS FOR CALCULATING ATTAINMENT - (DIRECT AND INDIRECT BOTH)

DIRECT ASSESSMENT *(WEIGHTAGE 80%):*

This is based on Continuous Internal Assessment (CIA), semester exams, assignments, projects, and presentations following the Bloom's taxonomy levels in exams: 30% on Level 1 ***(Remembering & Understanding)***; 30% on Level 2 ***(Applying)***; 40% Level 3 ***(Analysing, Evaluating, Creating)***.

Will construct all the tests based on Course Outcomes (CO)

⇩

Will calculate the weight of each CO

⇩

Check the affinity level with the Programme Outcomes (PO)

⇩

Calculate the Net average attainment
(CO +assignment as per the weightage for e.g. 30% +70%)

⇩

Set the overall level/categories *(threshold, target etc.)* **of the attainment.**

⇩

Calculate the overall attainment of each student and work accordingly whether s/he has attained the desired level OR **there's a need to change the inputs** OR **the level was setup as too low etc.**

⇩

80% weight will be assigned to the Direct assessment *(T1, Assignments, T2)* **& 20% weight will be assigned to the Indirect assessment** *(discussions, quizzes, behavioral change etc.)* **this makes the total of 100%**

INDIRECT ASSESSMENT *(WEIGHTAGE 20%):*

20% weight will be allocated to the Indirect assessment which will help to mark the progression of the students. *(discussions, quiz, behavioural change etc.)*

The process should also have Feedback Component CESA *(Student Feedback, Course End Survey)*, **and stakeholder inputs** *(Alumni, Employers, Parents)*