

INTERNAL QUALITY ASSURANCE MANUAL
(For internal circulation only)

Version 1.0

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Mary Matha Arts & Science College, Mananthavady, is situated on a beautiful hilltop on the Mananthavady-Mysore Highway amidst the sprawling greenery of the Western Ghats, one of the crucial biodiversity hotspots. The college seeks to instill in the students an awareness of their social rootedness and encourage them to be active agents in the construction of a just social order after its stated motto, vision, and mission. Though a minority institution, the College includes in its purview the educational aspirations of the community as a whole, irrespective of religion, caste, and social status.

Mary Matha Arts and Science College was established in 1995 and is administered by the Syro Malabar Catholic Diocese of Mananthavady. It has been granted recognition by the UGC and was accredited by the National Assessment and Accreditation Council (NAAC) in 2006 with a B++ (83.5) grade, and it was re-accredited with an A grade in 2014 and with a B++ (CGPA - 2.85) in 2019. It provides a diverse range of educational opportunities, encompassing undergraduate, postgraduate, research, and certificate programs in fields related to Arts, Science, and Commerce. The institution stands out as a symbol of academic excellence and comprehensive growth. Its impact on the local communities is enhanced through the institution's engagement in activities such as NSS, NCC, and college union, as well as through various student clubs and associations, which contribute to training and orientation.

Furthermore, the institution boasts a dedicated and proficient faculty body that serves as mentors, directing students towards both personal and professional advancement. In addition to academic pursuits, the college nurtures a dynamic and vibrant campus ambiance that offers abundant avenues for students to engage in extracurricular pursuits, sports, and cultural festivities. The college's cutting-edge facilities, encompassing well-furnished laboratories, digital learning resources, and a WiFi-enabled campus, greatly enrich the learning experience and contribute to the holistic development of every individual within the campus community. As a result of its exceptional academic standards and holistic approach, the college has earned a reputation as a premier educational institution in the region, attracting students from diverse backgrounds who seek excellence in education and a nurturing environment for their personal growth.

Vision

The holistic development of students with sound intellectual, physical, psychological, emotional, and spiritual maturity will pave the way for a truly democratic, secular, and equitable social order.

Mission

To make knowledge available to the students through quality education, irrespective of their religion, caste, or gender, while keeping in view the educational needs of the Christian community as well, thus being an active agent contributing to the socio-economic and cultural transformation of Wayanad.

Our college is affiliated with Kannur University. We offer undergraduate, postgraduate, and research programs. For these programs, the institute follows the curriculum designed by Kannur University. The programme outcomes (POs), program-specific outcomes (PSOs), and course outcomes (COs) are evaluated by the institution, and the same are communicated to the students in a formal way through discussion in the classroom and on the departmental notice board. The college takes measures to ensure that the POs, PSOs, and COs are attained. The institute follows the academic calendar of Kannur University. All teachers maintain an academic diary for each academic year. The internal examination committee analyzes evaluation reports and results. The college takes into account the feedback from the stakeholders for the attainment of PO, PSO, and CO. The Placement Committee reviews students' progression to higher studies and placement.

Outcome-Based Education (OBE): its objectives and benefits

Outcome-based education embodies a framework in which every facet and element of education is centered around the course's outcomes. Students enroll in courses with the specific intention of skill development or knowledge acquisition, and their responsibility lies in accomplishing the goal by the end of the course. Learning is not bound by a particular style or timeframe. Therefore, students have the freedom to learn according to their preferences. The guidance of faculty members, moderators, and instructors is aligned with the desired outcomes. OBE focuses on the capabilities students acquire upon completing each course and the entire program.

Objectives of OBE

1. To ensure that every student possesses the essential knowledge, skills, and qualities required for success upon completing their degree.
2. To provide enough opportunities for students by adopting a student-centered learning approach.
3. To enable the students to actively engage in the learning process and demonstrate their skills through challenging tasks and cognitive thinking.

Benefits of OBE

1. Enhances clarity for both teachers and students.
2. Students can enjoy the flexibility and autonomy in learning.
3. Multiple learning methods are available.
4. Entrusts students with full responsibility for achieving their goals.
5. Lessens the tendency to compare students due to their distinct individual objectives.

To calculate student attainment scores as per Bloom's taxonomy, we follow the following steps using the 'Accredit360' software, which is a single application to generate C0-PO Attainment,

student classification (slow and advanced), feedback analysis, and inputs for Criterion 2 of NAAC.

OBE Implementation Steps

1. Define programme outcomes (POs) and programme-specific outcomes (PSOs) for each program.
2. Defining course outcomes (COs) with Bloom's Taxonomy for each course.
3. Mapping COs with PSOs at suitable levels of Bloom's Taxonomy (CO-PSO Mapping Matrix)
4. Mapping COs with POs at suitable levels of Bloom's Taxonomy and Mapping Assessment Pattern with COs of each course (CO-PO Mapping Matrix).
5. Mapping content, modules, and topics with COs.
6. Defining pedagogical tools for course outcome delivery.
7. Mapping questions with COs at Bloom's Taxonomy Levels and Assessments.
8. Defining rubrics with Bloom's Taxonomy and COs (including weaker and brighter cut-offs)
9. Calculate CO-PO and CO-PSO achievement scores using “Accredit360 Software.”
10. Presentation of attainment score in department council.
11. Tracking students' performance through proper remedial measures.
12. Measuring students' performance against CO threshold, course-wise.
13. Measuring students' performance against the PO threshold, semester-wise.
14. Measuring the attainment of each PO through direct or indirect assessments.
15. Comparing PO for the last 3 academic years and proposing remedial actions.

PSO, PO, AND CO STATEMENTS

1. **Program Outcomes (POs):** This signifies the culmination of knowledge, skills, and attitudes that students are expected to have acquired by the conclusion of a program.
2. **Program Specific Outcomes (PSOs)** consist of statements that outline the abilities and competencies that graduates of a particular subject or program should have the capability to demonstrate.
3. **Course Outcomes (COs)** are explicit and quantifiable statements that establish the knowledge, skills, and attitudes that learners will exhibit upon successfully completing a course.

PROGRAMME OUTCOMES (POs)

The following are undergraduate program outcomes:

1. Critical Thinking:

- a. Acquire the ability to apply the basic tenets of logic and science to thoughts, actions, and interventions.
- b. Develop the ability to chart out a progressive direction for actions and interventions by learning to recognize the presence of hegemonic ideology within certain dominant notions.
- c. Develop self-critical abilities and also the ability to view positions, problems, and social issues from plural perspectives.

2. Effective Citizenship:

- a. Learn to participate in nation-building by adhering to the principles of sovereignty of the nation, socialism, secularism, democracy, and the values that guide a republic.
- b. Develop and practice gender-sensitive attitudes, environmental awareness, the ability to understand and resist various kinds of discrimination, and empathetic social awareness about various kinds of marginalization.
- c. Internalize certain highlights of the nation's and region's history. Especially of the freedom movement, the renaissance within native societies, and the project of modernization of post-colonial society.

3. Effective Communication:

- a. Acquire the ability to speak, write, read, and listen clearly in person and through electronic media in both English and one modern Indian language.
- b. Learn to articulate the analysis, synthesis, and evaluation of situations and themes in a well-informed manner.
- c. Generate hypotheses and articulate assent or dissent by employing both reason and creative thinking.

4. Interdisciplinarity:

- a. Perceive knowledge as an organic comprehensive, interrelated, and integrated faculty of the human mind
- b. Understand the issues of environmental contexts and sustainable development as a basic interdisciplinary concern of all disciplines.
- c. Develop aesthetic, social, humanistic, and artistic sensibilities for problem-solving and evolve a comprehensive perspective.

The following are postgraduate program outcomes:

1. Have the skills needed to pursue careers in education, business, and/or industry.
2. Be prepared for continued study of mathematics or statistics at the postgraduate level and more.
3. Experience mathematics outside of regular coursework.
4. Communicate Mathematics effectively
5. Demonstrate a computational ability to solve a wide array of mathematical problems
6. Differentiate between valid and invalid mathematical reasoning
7. Develop mathematical ideas from basic axioms.
8. Utilize mathematics to solve theoretical and applied problems.
9. Identify applications of mathematics in other disciplines and in society.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Programme Specific Outcome of B A Functional English:

1. Demonstrate a thorough command of the English language and its linguistic structures.
2. Communicate through speech and writing in a variety of contexts and genres
3. Produce and edit oral and written English communication and translate English into Malayalam and Hindi, and vice-versa
4. Recognize and appreciate the importance of major literary genres, sub-genres, and periods.
5. Analyze discourse for artistic merit, practical effect, philosophical standard, and underlying structure
6. Recognize and comprehend different varieties of English.
7. Exchange ideas with faculty and students in classrooms and on campus.

Programme Specific Outcome of B A Social Science - Economics

1. The programme develops intellectual skills among the students to understand and conceptualize social and economic problems, theories, and models.
2. The programme fosters critical thinking among the students to apply economic theories and empirical observations to conceptualize, quantify, and find pragmatic solutions to a wide range of contemporary social and economic problems.
3. The programme motivates students to present socio-economic arguments in both quantitative and non-quantitative forms and equips them to collect, process, and interpret data, including statistical inference.
4. The programme promotes research aptitude and the student's ability to design and write research papers using primary and secondary data sources
5. The programme prepares the students to explore the career opportunities and options available across the globe.

Programme-Specific Outcome of B.Com

1. Understand the concepts and techniques of commerce and its application in a business environment
2. Conceive the ideas on entrepreneurship and develop the skills for setting up and managing business organizations
3. Develop the skills and abilities to become competent and competitive in the business world
4. Develop the competency to make wise decisions at a personal and professional level
5. Appraise the impact of other disciplines on the working of business

Programme-Specific Outcome of B.Sc. Chemistry

1. Understand the fundamental concepts, principles, and processes underlying the academic field of chemistry, its different subfields (analytical, inorganic, organic, and physical), and its linkages with related disciplinary areas and subjects;
2. Demonstrate procedural knowledge that creates different types of professionals in the field of chemistry and related fields such as pharmaceuticals, chemical industry, teaching, research, environmental monitoring, product quality, consumer goods industry, food products, cosmetics industry, etc.;
3. Employ critical thinking and the scientific method to design, carry out, record, and analyze the results of chemical experiments and gain awareness of the impact of chemistry on the environment and society.
4. Use chemical techniques relevant to academia and industry, generic skills, and global competencies, including knowledge and skills that enable students to undertake further studies in the field of chemistry or a related field and work in the chemical and non-chemical industry sectors.

5. Undertake hands-on lab work and practical activities that develop problem-solving abilities required for a successful career in pharmaceuticals, chemical industry, teaching, research, environmental monitoring, product quality, consumer goods industry, food products, cosmetics industry, etc.
6. Understand the safety of chemicals, transfer and measurement of chemicals, preparation of solutions, and the green route for chemical reactions for sustainable development.
7. Create awareness of the impact of chemistry on the environment, society, and development outside the scientific community.

Program-Specific Outcome of B.Sc. Computer Science:

1. Understand the concepts of Computer Science and Applications.
2. Understand the concepts of System Software and Application Software.
3. Understand the concepts of Algorithms and Programming.
4. Understand the concepts of Computer Networks and Operating Systems
5. Design, develop, implement and test software systems to meet the given specifications, following the principles of Software Engineering

Programme Specific Outcome of B.Sc. Mathematics:

1. Understand the basic concepts and tools of Mathematical logic, Set theory, Number theory, Geometry, Calculus, Algebra, Abstract structures, Linear Algebra, Analysis, Laplace transforms, Fourier series, Graph theory, and Optimization and methods of proofs.
2. Model real-world problems into mathematical problems, find solutions, and understand the application of mathematics in other sciences and engineering.

Programme-Specific Outcome of B.Sc. Physics:

1. Understand and apply the principles of classical mechanics, quantum mechanics, thermodynamics, nuclear physics, and electrodynamics.
2. Understand and apply the principles of solid-state physics, optics, photonics, and spectroscopy.

3. Understand the principles of electronics, design, and test electronic circuits.

Program-Specific Outcome of M.Sc. Computer Science:

1. Knowledge of advanced models and methods of mathematics, including some from the research frontier of the field, and expert knowledge of a well-defined field of study based on the highest international level of research in mathematics.
2. Specific skills in independently comprehending, analyzing, modeling, and solving given problems at a high level of abstraction based on logical and structured reasoning.
3. Ability to use computer calculations as a tool to carry out scientific investigations and develop new variants of the acquired methods, if required by the problem at hand.
4. Knowledge and understanding are assessed by a combination of examinations, coursework assignments, and presentations.

Program-Specific Outcome of M.Sc. Mathematics:

1. Knowledge of advanced models and methods of mathematics, including some from the research frontier of the field, and expert knowledge of a well-defined field of study, based on the highest international level of research in mathematics.
2. Specific skills in independently comprehending, analyzing, modeling, and solving given problems at a high level of abstraction based on logical and structured reasoning.
3. Ability to use computer calculations as a tool to carry out scientific investigations and develop new variants of the acquired methods, if required by the problem at hand.
4. Knowledge and understanding are assessed by a combination of examinations, coursework assignments, and presentations.

Course Outcomes (COs) Statements

Course outcomes are the specific learning objectives and goals that are set for a particular course. These outcomes are defined in the course syllabus and serve as a guide for both instructors and students throughout the duration of the course.

BLOOM'S TAXONOMY

Bloom's Taxonomy, developed in 1956 under the guidance of educational psychologist Dr. Benjamin Bloom, was formulated to advance elevated levels of cognitive thinking within education. Its purpose was to encourage more advanced cognitive processes like analyzing and evaluating concepts, procedures, principles, and processes, moving beyond a mere recall of facts. This framework is predominantly employed when devising educational, training, and learning methodologies. The details are given in Table 1.

Table 1: Bloom's Taxonomy

| Domains | Keyboards | Example |
|--|---|---|
| Remembering: Recall or retrieve previously learned information. | Defines, describes, identifies, knows, labels, lists, matches, names, outlines, recalls, recognizes, reproduces, selects, states | Recite a policy, Quote prices from memory to a customer and Recite the safety rules. |
| Understanding: Comprehending the meaning, translation, interpolation, and interpretation of instructions and problems. State a problem in one's own words. | Comprehends, converts, defends, distinguishes, estimates, explains, extends, generalizes, gives an example, infers, interprets, paraphrases, predicts, rewrites, summarizes, translates | Rewrite the principles of test writing. Explain in one's own words the steps for performing a complex task. Translate an equation into a computer spreadsheet. |
| Applying: Use a concept in a new situation or unprompted use of an abstraction. Applies what was learned in the classroom to novel situations in the workplace. | Applies, changes, computes, constructs, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses. | Use a manual to calculate an employee's vacation time. Apply laws of statistics to evaluate the reliability of a written test. |

| | | |
|---|--|--|
| <p>Analyzing: Separates material or concepts into component parts so that its organizational structure may be understood.</p> | <p>Analyzes, breaks down, compares, contrasts, diagrams, deconstructs, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, relates, selects, separates</p> | <p>Troubleshoot a piece of equipment by using logical deduction. Recognize logical fallacies in reasoning. Gather information from a department and select the required tasks for training.</p> |
| <p>Evaluating: Make judgments about the value of ideas or materials.</p> | <p>Appraises, compares, concludes, contrasts, criticizes, critiques, defends, describes, discriminates, evaluates, explains, interprets, justifies, relates, summarizes, and supports</p> | <p>Select the most effective solution. Hire the most qualified candidate. Explain and justify a new budget.</p> |
| <p>Creating: Builds a structure or pattern from diverse elements. Put parts together to form a whole, emphasizing creating a new meaning or structure.</p> | <p>Categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes</p> | <p>Write a company operations or process manual. Design a machine to perform a specific task. Integrates training from several sources to solve a problem. Revises and processes to improve the outcome.</p> |

Mapping of COs with POs and PSOs of all the Courses

By mapping course outcomes to program outcomes and program-specific outcomes, institutions ensure that their curriculum is coherent, purposeful, and directed toward producing graduates with the desired skills and knowledge. It also helps in accreditation processes by demonstrating that the curriculum is designed to meet specific educational standards.

All the courses together must cover all the POs (and PSOs). For a course, we map the COs to POs through the CO-PO matrix and to PSOs through the CO-PSO matrix, as shown below. The various correlation levels are:

- Ø “1” – Slight (Low) Correlation
- Ø “2” – Moderate (Medium) Correlation
- Ø “3” – Substantial (High) Correlation
- Ø “-” indicates there is no correlation.

Sample CO-PO AND CO-PSO Mapping:

The mapping strength of a course to PO/ PSO can be obtained by taking the average of the CO-PO/ PSO mapping matrices of that course. There are three COs, four POs, and five PSOs. The mapping of Computer Networks (6B12CSC) is shown below:

CO-PO Mapping:

6B12CSC

CO-PO MAPPING

| | PO1 | PO2 | PO3 | PO4 |
|------------|-----|-----|------|------|
| CO1 | 3 | - | 1 | 1 |
| CO2 | 3 | - | 2 | 2 |
| CO3 | 3 | - | 2 | 2 |
| Mapping | 3 | - | 1.67 | 1.67 |
| Attainment | 3 | - | 1.67 | 1.67 |

CO-PSO Mapping:

CO-PSO MAPPING

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|------------|------|------|------|------|------|
| CO1 | 3 | - | 1 | 3 | 2 |
| CO2 | 3 | - | - | 3 | 2 |
| CO3 | 3 | - | - | 3 | 2 |
| Mapping | 3 | - | 1 | 3 | 2 |
| Attainment | 3 | - | 1 | 3 | 2 |

Course - PO Mapping Consolidated:

Course: Computer Networks Course Code: 6B12CSC

| PO MAPPING (Consolidated) | | | | |
|----------------------------------|-----|-----|------|------|
| | PO1 | PO2 | PO3 | PO4 |
| 6B12CSC | 3 | - | 1.67 | 1.67 |

Course - PSO Mapping Consolidated:

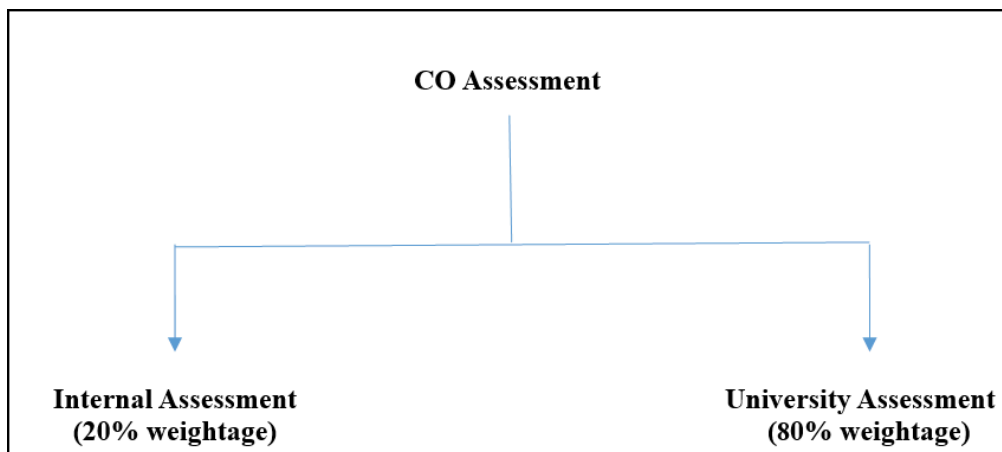
Course: Computer Networks Course Code: 6B12CSC

| PSO MAPPING (Consolidated) | | | | | |
|-----------------------------------|------|------|------|------|------|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| 6B12CSC | 3 | - | 1 | 3 | 2 |

ASSESSMENT PROCESS

Assessment Process for Course Outcome Attainment:

(i) CO Assessment Rubrics:



Course Outcome are evaluated based on the performance of students in internal assessments and in university examinations of a course. Internal assessment contributes 20% and university assessment contributes 80% to the total attainment of a CO.

(ii) CO Assessment Tools:

The various assessment tools used to evaluate COs and the frequency with which the assessment processes are carried out are listed in the following Table 2.

Table 2: Direct Assessment Tools

| Course Type | Assessment Tools | | Minimum Frequency |
|-------------|---------------------|------------------------------|---|
| | Internal Evaluation | Internal Tests Model exam | Two internals and one model exam per course |

Theory

| | | | |
|-----------------------|----------------------------------|--|-----------------------|
| | | Assignments Case Study Seminars Quizzes | Any two per course |
| | External Evaluation | University Exam | Once per course |
| Practical | Internal Evaluation | Model Lab exam | Once per course |
| | External Evaluation | University Lab Exam and Viva | Once per course |
| Seminar | Presentation and Viva (Internal) | | Once per course |
| Project | Internal Evaluation | Preliminary Evaluation by Guide | Continuous Evaluation |
| | | Progress Assessment | Twice per course |
| | External Evaluation | Demonstration and Viva | Once per course |
| Comprehensive Exam | Oral Exam (Internal / External) | | Once per course |

(iii) Quality and Relevance of the Assessment Process:

a. Internal Assessment Process: Theory

i. Test Papers: Two test papers must be administered for each course as a minimum requirement. If more than two test papers are conducted, only the two highest scores will be considered for determining the Internal Assessment (IA) marks. The dates for these test papers will be announced in advance, and the marks will be publicly posted on the notice board.

ii. Model Exam: Additionally, a model exam covering the entire course syllabus will be conducted for each course. The dates for the model exam papers will be announced well in advance, and the marks obtained will also be displayed on the notice board.

ii. Assignments: One or more assignments (including practical assignments) shall be given for each course. The mode of assessment of the assignments shall be decided by the faculty concerned with due approval from the department council and shall be declared at the beginning of the semester. (It is suggested that, to the extent possible, give individual assignments and also conduct short viva based on the assignment submitted.)

iii. Case study/seminar/viva: The faculty, with due approval from the department council, shall choose one or more from this category, depending on the nature of the subject and the mode of assessment to be declared at the commencement of the semester. For the seminar, topics outside of but related to the syllabus shall be chosen.

The internal assessment marks will be calculated based on the marks obtained in the two test papers: the model exam, assignments, and case study/seminar/viva.

b. University Examinations:

These end-semester examinations are of 3-hour duration and cover the entire syllabus of the course. It would generally satisfy all course outcomes for a particular course. The COs are evaluated based on the set attainment levels.

c. Practical Examinations:

A model lab exam is conducted to assess the ability of a student to perform a given task by integrating the knowledge gained from related theory courses and regular lab sessions. Marks will be awarded based on external examinations conducted in the presence of external and internal examiners.

d. Project Work

A group of 3 or 4 students from UG can take up the group project. Projects are evaluated based on individual presentations and answers to the questions. For example, every student in the B.Sc. Computer Science Program will have to work on a project worth five credits under the supervision of a faculty member as per the curriculum. The duration of the project is one semester, starting in the fifth semester, with submission of the dissertation at the end of the sixth

semester. Individual projects are recommended, but in an instance where the number of supervising teachers is less, the project may be done as a group. The maximum number of students in a group shall be limited to three.

Each PG scholar is required to work individually. The duration of the project starts in the third semester, and the submission of the dissertation is at the end of the fourth semester.

Project Evaluation:

Evaluation of the project work shall be done under the Mark System in two stages:

1. Internal Assessment (supervising teachers will assess the project and award internal Marks)
2. External evaluation (external examiner appointed by the University)

Marks secured for the project will be awarded to candidates, combining the internal and external marks. Assessments of different components may be taken as below:

CONTINUOUS EVALUATION FOR PROJECT

| COMPONENT | WEIGHTAGE |
|--|------------------|
| Punctuality | 20% |
| Relevance of topic System study / Design of tables | 20% |
| Project Report | 30% |
| Presentation & Viva-voce | 30% |
| Total | 100% |

Project – Phase I:

Project Identification and Allotment Process:

Project work is to be done by group of students. A maximum of four students are permitted in any one group. The project coordinator will assign a Project Guide/Supervisor to the group. Each group undertakes a project, which is spread over a period of two semesters. The project is identified during the seventh semester and its implementation is completed in the eighth semester. The project proposal will be first approved by the project guide. The Project

Proposals submitted by each group will be classified into different categories: Safety, Cost, Ethics, Society, Environment, etc.

The proposals should map to any one of the above categories to ensure the quality of the project. Each group will submit the abstract of the project proposal to the project coordinator. The project evaluation committee, composed of the head of the department, the project coordinator, and one or two faculty members, will finalize the proposal during the zeroth review.

Process for Continuous Monitoring of Projects:

Students are directed to maintain a project diary to record the activities related to the project work. Each group must meet their project guide once in a week and the guide may evaluate the progress of the project. The students should fill out their project diary with the details of the discussion and the guide should note the comments in the project diary. After the first review, each group must identify the major phases involved in the project. Once the phases are identified, each group may prepare the project schedule using Gantt charts. After the completion of each phase, the percentage contribution of work by each team member will be measured by the project guide.

Process for Evaluation of the Project:

The evaluation of the project goes through four phases: a zeroth, first, second, and final review.

Review 1: The project proposal by each group will be approved in the zeroth review.

- The proposals of the groups that the evaluation committee rejects are directed to provide a new proposal with the consent of the project guide.
- A document consisting of the following details should be submitted to the evaluation committee along with the approval of the project guide:
 - Relevance of the project proposed
 - Literature survey
- Objectives: A statement of how the objectives are to be tackled.

Review 2: The second review focuses on the partial implementation of the project. The contribution of each team member will be assessed by the evaluation committee during this review. The evaluation committee will also check the progress of the work with the project schedule. A document describing the tools and techniques required for implementation and a logical description of the implemented modules should be submitted to the evaluation committee. Individual involvement in project work is assessed based on responses to questions asked by the panel.

Final Review: Entire project demonstration and presentation for awarding internal marks.

End semester evaluation will be as per the table given below:

END SEMESTER EVALUATION FOR PROJECT

| COMPONENT | WEIGHTAGE |
|--|-------------|
| Written Synopsis/Abstract | 12.5% |
| Content of the Project | 12.5% |
| Quality of project work/Use of software/ tools | 12.5% |
| Perfection of the work (Designs of tables/ Input & Output forms) | 25% |
| Live demo | 12.5% |
| Viva-voce | 25% |
| Total | 100% |

e. Records:

One rough record (an observation note) and one fair record are compulsory for each practical course. The student cannot appear for practical examinations without certified practical records. The records are intended as observation records of the practical work done in the lab. The valuation of records, to be done internally, should be based on the effort and promptness of the student in practical work. The record mark is calculated at the time of the End-Semester Evaluation. Observation notes are compulsory during Lab hours. Students should get signatures for each program done in the lab from the faculties and those programs are recommended for a fair record.

PG Seminar / Case Studies: The PG student makes a seminar presentation on a topic of his/her choice and is approved by the assigned seminar guide. The seminar presentation is planned for a duration of 15 minutes, including a question-answer session lasting 5 to 10 minutes. The seminar is evaluated based on the presentations by the students before an evaluation committee consisting of 3 to 4 faculty members. The committee evaluates the seminar based on the following parameters:

1. **Presentation:** The quality of the presentation and communication skills are assessed by the evaluation committee.
2. **Viva-voce:** At the end of the presentation, the assessment panel and the student audience ask questions and seek clarification on specific issues related to the seminar. The effectiveness of the student's response to these queries is assessed.

Report and Documentation: A Bonafede report on seminar/project/case studies is submitted at the end of the semester. This report shall include an explanation of the topic and programming/experimental results in addition to the presentation materials and all relevant supplementary materials. All references must be given toward the end of the report. A student's ability to comprehend and write effective reports and design documentation is assessed by evaluating the report.

PG Comprehensive Examination:

Comprehensive examinations are conducted for PG students to assess the comprehensive knowledge gained in basic courses relevant to the branch of study. The subjects to be studied for the assessment are prescribed by the university. This is to check the ability of the student to comprehend the questions asked and answer them with confidence. The subjects to be studied for the assessment are prescribed by the university. The assessment is carried out through an oral examination and is conducted internally, covering all the courses of the program. Practice questions are given to the students to familiarize them with the examination during the allotted objectives. Statement of how the objectives are to be tackled.

(iii) Calculation of Attainment Levels:

There are three levels of attainment that can be calculated using the criteria given in Table 3.

Table 3: Attainment Levels of COs

| Assessment Methods | Attainment Levels | |
|-----------------------|-------------------|---|
| Internal Assessment | Level 1 | 50% of the students achieved scores higher than 45% in internal assessment tools. |
| | Level 2 | 60% of the students achieved scores higher than 45% in internal assessment tools. |
| | Level 3 | 70% of the students achieved scores higher than 45% in internal assessment tools. |
| University Assessment | Level 1 | 50% of the students achieved scores higher than 45% in university examinations. |
| | Level 2 | 60% of the students achieved scores higher than 45% in university examinations. |
| | Level 3 | 70% of the students achieved scores higher than 45% in university examinations. |

(v) CO Attainment Calculation of a Course: A sample calculation is given below.

Table 4: CO Attainment of C110

| A BATCH | | | | | | |
|---------------------------------------|-------------|----------|----------|----------|----------|------------|
| Assessment Tool | C110.1 | C110.2 | C110.3 | C110.4 | C110.5 | C110.6 |
| Class Test 1 | - | 3 | 3 | 3 | - | - |
| Class Test 2 | - | - | 3 | 3 | 3 | - |
| Model Exam | 3 | - | - | - | 3 | 2 |
| Assignment 1 | - | 3 | 3 | - | - | - |
| Assignment 2 | - | - | - | - | 3 | - |
| Internal Attainment | 3 | 3 | 3 | 3 | 3 | 2 |
| External Attainment (University Exam) | 3 | 3 | 3 | 3 | 3 | 3 |
| Total Attainment | 3 | 3 | 3 | 3 | 3 | 2.7 |
| Avg. CO Attainment | 2.95 | | | | | |

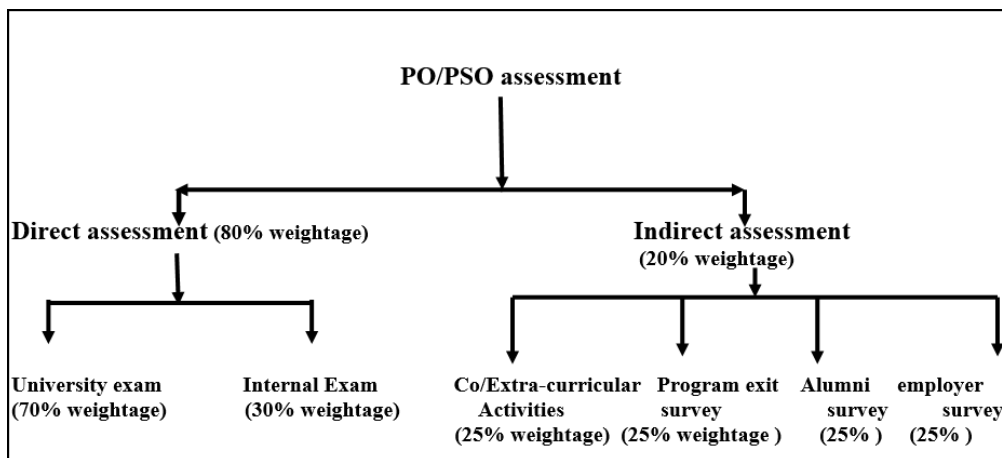
Table 4 shows the sample CO attainment of Introduction to Computing and Problem-Solving. Class test-1 addresses the attainment calculation of COs C110.2, C110.3, and C110.4. Class test-2 addresses the COs C110.3, C110.4, and C110.5, whereas class test-3 addresses C110.1, C110.5, and C110.6. Assignment 1 is given so as to measure the attainment of C110.2 and C110.3 and assignment-2 is for C110.5. The internal attainment of each CO in C110 is the average of attainments obtained using various internal assessment tools. University exams cover the entire syllabus of a course and hence it is useful to measure the attainment of all COs related to a course. The total attainment is the sum of 20% of internal attainment and 80% of university attainment. Internal attainment is the average of attainments obtained using various internal assessment tools:

$$\text{Total Attainment} = 20\% \text{ internal attainment} + 80\% \text{ university attainment}$$

The course outcomes of all courses are assessed with the help of the above-mentioned assessment tools and attainment level is evaluated based on set attainment rubrics as per Table 2. If the average attainment of a particular course for three consecutive years is greater than 80% of the maximum attainment value (i.e., 80% of 3 = 2.4), then for that particular course, the current rubrics for attainment must be changed to analyze continuous improvement.

II. ASSESSMENT PROCESS FOR OVERALL PO AND PSO ATTAINMENT:

(i) PO and PSO Assessment Process:



PO/PSO assessment is done by giving 80% weightage to direct assessment and 20% weightage to indirect assessment. Direct assessment is based on CO attainment, where 80% weightage is given to attainment through university exams and 20% weightage is given to attainment through internal assessments. Indirect assessment is done through the program exit survey, the alumni survey, and the employer survey, where the program exit survey and the employer survey are given a weightage of 25% each and the alumni survey is given a weightage of 50%.

(ii) PO and PSO Assessment Tools:

The various direct and indirect assessment tools used to evaluate POs and PSOs and the frequency with which the assessment processes are carried out are listed in Table 5.

Table 5: Assessment tools and processes used for evaluation of PO and PSO attainment

| Direct Assessment Tools (80%) | | | |
|-------------------------------|---------------------|------------------------------|---|
| | Course Type | Assessment Tools | Minimum Frequency |
| Theory | Internal Evaluation | Internal Tests Model Exam | Two internals and one model exam per course |
| | Internal Evaluation | Assignments Case Study | Any two per course |

| | | | |
|---------------------------------|------------------------|---------------------------------|-----------------------|
| Theory | | Seminars Quizzes | |
| | External Evaluation | University Exam | Once per course |
| Practical | Internal Evaluation | Model Lab Exam | Once per course |
| | University Examination | University Lab Exam and Viva | Once per course |
| Seminar | Internal | Presentation and Viva | Once per course |
| Project | Internal Evaluation | Preliminary Evaluation by Guide | Continuous evaluation |
| | | Progress Assessment | Twice per course |
| | External | Demonstration and Viva | Once per course |
| Comprehensive Exam | Internal / External | Viva | Once per course |
| Indirect (20% Weightage) | | | |
| Program Exit Survey | | | Once in a year |
| Employer Survey | | | Once in a year |
| Alumni Survey | | | Once in a year |

(a) Direct Assessment Tools and Process:

The direct assessment tools described in Table-5 are used for the direct assessment of POs and PSOs. Initially, the attainment of each course outcome is determined using internal as well as external (university exam) assessments. The attainment of each PO corresponding to a particular course is determined from the attainment values obtained for each course outcome related to that PO and the CO-PO mapping values. Similarly, the values of PSO attainment are also determined. Fig-1 shows the direct assessment of POs and PSOs in Introduction to Computing and Problem-Solving (C110) as a sample.

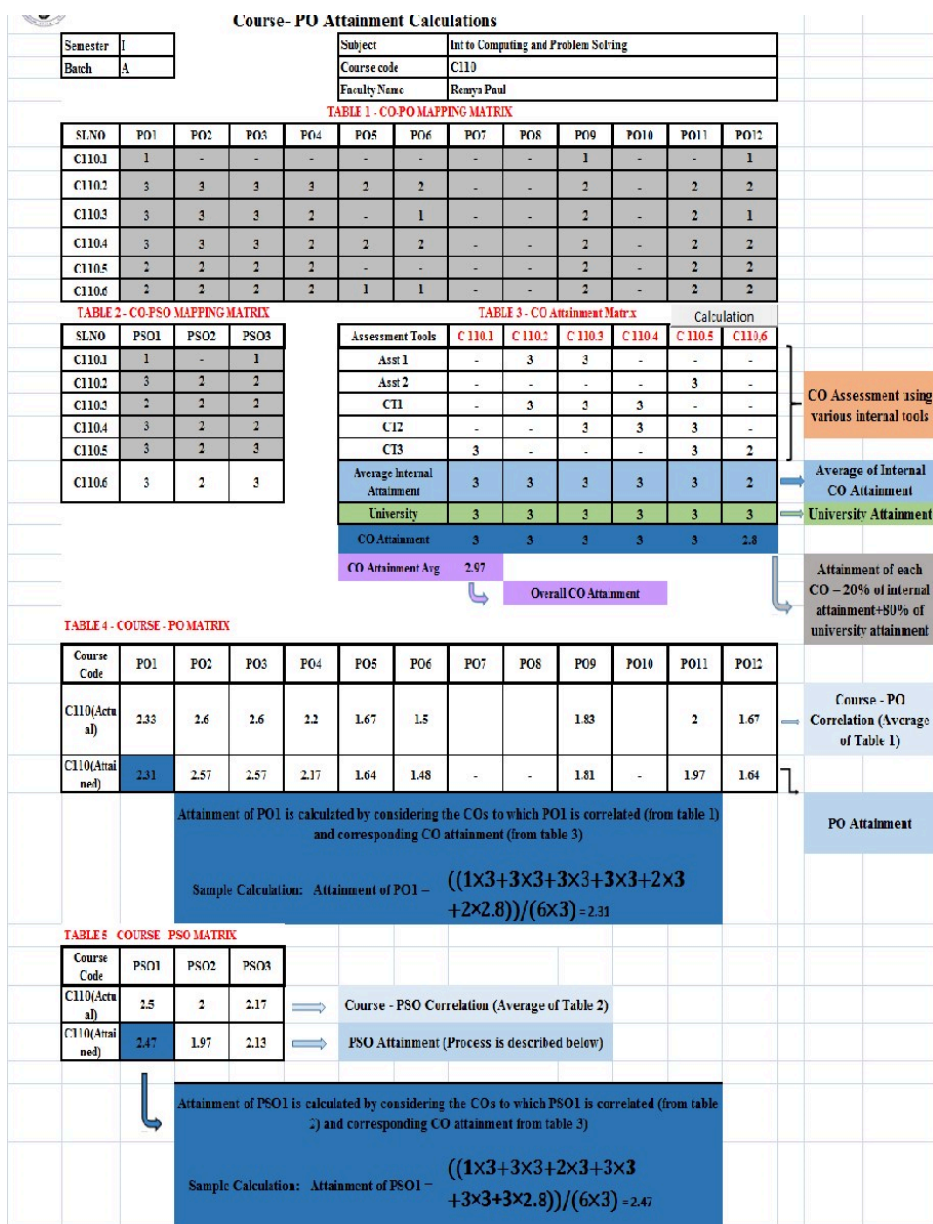


Fig. 1 Attainment Calculation Process

The attainment of each PO corresponding to a particular course is determined from the attainment values obtained for each course outcome related to that PO and the original CO-PO mapping values. The attainment of each course outcome is determined using internal as well as external (university exam) assessments. The internal assessment is calculated using various tools described in Table 5. The attainment of a course outcome using internal assessment is obtained by taking the average value of the attainment levels of that course outcome measured using various tools.

(b) Direct Attainment

Direct Attainment D_i = Average of direct attainments of PO_i obtained for all courses.

| | | | | | |
|-------------------|-----|-----|-----|-----|-----|
| POs | PO1 | PO2 | PO3 | PO4 | PO5 |
| Direct Attainment | D1 | D2 | D3 | D4 | D5 |

(c) Indirect Assessment Tools and Process:

Indirect assessment is done through the program exit survey, the alumni survey, and the employer survey, where the program exit survey and the employer survey are given a weight of 25% each and the alumni survey is given a weight of 50%.

(d) Program Exit Survey: An exit survey is conducted for students who have graduated from the department for that year. A relevant questionnaire in the exit survey form to evaluate the attainment of POs and PSOs is given in Annexure - I and the relationship between POs and PSOs with a questionnaire is given below:

Relation of POs and PSOs with a questionnaire:

| | | | |
|-----------|-----|-----|-----|
| POs | PO1 | PO2 | PO3 |
| Questions | Q1 | Q2 | Q3 |

Evaluation Process:

| | | |
|-----------|------|------|
| PSOs | PSO1 | PSO2 |
| Questions | Q4 | Q5 |

The questionnaire consists of five questions that are relevant for accessing each PO and PSO. The first three questions correspond to the three POs, and the remaining two questions are for the PSO. Each question has three options, namely Extremely Satisfied, Satisfied, and Somewhat Satisfied, which are given marks 3, 2, and 1, respectively. The survey results are tabulated, and the average values corresponding to each PO and PSO are calculated.

The same procedure will be followed for the employer survey and the alumni survey. The relevant questionnaire forms to evaluate the attainment of POs and PSOs are given in Annexure - II and Annexure - III.

Annexure - I**1. Questionnaire Format for Program Exit Survey**

| Sl. No. | Overall, are you satisfied with | Extremely Satisfied | Satisfied | Somewhat Satisfied |
|----------------|---|----------------------------|------------------|---------------------------|
| 1 | Basic Knowledge in Maths, Science, and Humanities | | | |
| 2 | Ability to identify, design, analyze, and solve computer-based problems | | | |
| 3 | Design /development of complex problems using programming ability | | | |
| 4 | Use of research-based knowledge and research methods | | | |
| 5 | Demonstrate the ability to apply advanced technologies to solve contemporary and new problems | | | |

Annexure - II

2. Questionnaire Format for Employer Survey

Rate the MMC graduates working in your organization using the following criterion. Put a tick mark. (*Knowledge, Skills, Abilities, Attitude, and other Attributes expected out of MMC graduates*)

| Sl. No. | Overall, are you satisfied with | Extremely Satisfied | Satisfied | Somewhat Satisfied |
|---------|---|---------------------|-----------|--------------------|
| 1 | Capacity for the development and analysis of real-world problems and the formulation of appropriate solutions, while retaining professional and ethical responsibilities. | | | |
| 2 | Aptitude for self-education, ability to learn new skills, and a clear appreciation for the value of lifelong learning to update professional knowledge. | | | |
| 3 | Understanding the solutions for sustainable development and their application in global, national, and societal contexts. | | | |
| 4 | Competence for acquiring new skills and applying them in research and development | | | |
| 5 | Fundamental knowledge in mathematics and science and fluency in English. | | | |

Annexure - III

3. Questionnaire Format for Alumni Survey

Please rate each of the following Knowledge, skills, abilities, and attitudes in terms of how well MMC inculcated them in your education.

| Sl. No. | Overall, are you satisfied with | Extremely Satisfied | Satisfied | Somewhat Satisfied |
|----------------|--|----------------------------|------------------|---------------------------|
| 1 | Ability to identify, formulate and analyze problems | | | |
| 2 | Design/development of complex problems and their solutions | | | |
| 3 | Understanding professional technical solutions in societal and environmental contexts | | | |
| 4 | Understanding of professional and ethical responsibilities | | | |
| 5 | Capable of self-education and clear understanding of the value of updating their professional/technical knowledge to engage in life-long learning. | | | |

Annexure IV

User Manuals of “Accredit360” Software



USER MANUAL

Accredit360 Software (Theory)

Ver. 1.1

© 2020

ABOUT THE SOFTWARE

The 'Accredit360' software is a single application to generate CO-PO Attainment, student classification(weak and bright) , Feedback analysis and inputs for Criterion 2 of NAAC/NBA.

SOFTWARE REQUIREMENTS

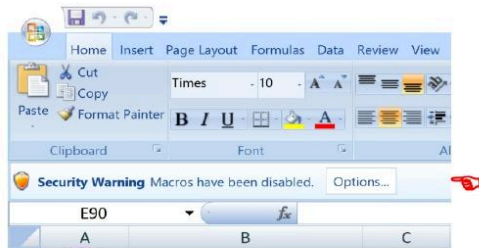
Windows - Excel (version 2007 and above)

STEPS

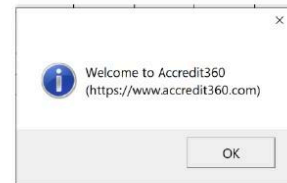
1. Double click the *Theory (Template).xism* file 

If 'MACRO'; is not enabled a warning message will be shown. Then enable MACRO by clicking on the options.

Click on OPTIONS



Enable this content



Once macro is enabled a *welcome message* is shown. Click **OK** to continue

2. Tabulation with worksheets (Input 1, Input 2, Attainment, Feedback, Weak-Bright , C2)

INPUT 1 Worksheet

Fill data in Header Cells(grey)

Choose data from drop-down lists / TYPE(If drop-down list is not available)

– Basic details about the course

| | | | |
|-----------------|--------------------------------|--------------|------|
| Branch | Computer Science & Engineering | Subject | OODP |
| Semester | IV | Course code | C212 |
| Batch | B | No: of COs | 6 |
| No: of students | 57 | No: of POs | 12 |
| University Exam | YES | No: of PSOs | 3 |
| Assessment Year | 2019-20 | Faculty Name | DNJ |



Branch – Department

Semester – I to VI OR I to VIII

Batch – A OR B OR C

No: of students – Registered for the course

University Exam – Only Internal exams(NO), Both Internal & External(YES)

Assessment Year – 1st July 2019 to 30th June 2020 (2019-20)

Subject – Course

Course code – Course code as per University/NBA/NAAC

No: of COs,POs,PSOs – Around 6(Maximum 12), Around 7(Maximum 12) and Around 2 to 4(Maximum 12) respectively

Faculty Name – Faculty code

Choose data from drop-down lists / TYPE(If drop-down list is not available)

– Details about Assessment Tools

| Assessment Tool | Series 1 | Asst 1 | Asst 2 | Series 2 | | | | | University |
|-----------------------|----------|--------|--------|----------|--|--|--|--|------------|
| No: of Questions | 14 | 3 | 3 | 14 | | | | | I |
| Max Marks | 60 | 10 | 10 | 60 | | | | | |
| Weightage(%) | 10 | 5 | 5 | 10 | | | | | 70 |
| Attainment Cut-off(%) | 60 | 60 | 60 | 60 | | | | | B |
| Weaker Cut-off(%) | 40 | 40 | 40 | 40 | | | | | |
| Brighter Cut-off(%) | 80 | 80 | 80 | 80 | | | | | |

Assessment Tool ,No: of Questions , Max Marks : Self explanatory

Weightage :

Internal : External => 30 : 70

The external weightage is fixed as 70. Divide the remaining internal weightage of 30 among the internal assessment tools based on marks weightage. The total weightage should be always 100.

Attainment Cut-off(%) :

Internal Evaluation: Average of Internal Marks for the same Course and Program in the previous 3 Academic Years. Fix it as 40 or 45 as this is a revised new syllabus.

End Semester Exam: Average of End Semester Exam in the previous 3 Academic Years.

Fix it as P or D as this is a revised new syllabus.

Weaker Cut-off % : Set as pass mark, 40%

Brighter Cut-off % : Set for brighter students, 70% or 80%

Fill MISSING data after roll number Auto-generation

| Roll No | Name | Series 1 |
|---------|------|----------|
| | | Q1 |
| | | C212.1 |
| | | Remember |
| 1 | A | 0.5 |
| 2 | B | 1 |

Assessment Tool No: (Auto - generated)
 Question No: (Auto - generated)
 Course Outcome 1 for C212

FILL Name and Marks. Copy and paste options are allowed.

INPUT 2 Worksheet

Enter data in below three matrices

CO-PO MAPPING MATRIX

CO-PO MAPPING MATRIX

| SLNo | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| C212.1 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | - | 1 |
| C212.2 | 2 | 3 | 3 | 1 | 1 | - | - | - | 2 | - | - | 2 |

The mapping values are “-”, “1”, “2” or “3”

CO-PSO MAPPING MATRIX

CO-PSO MAPPING MATRIX

| SLNo | PSO1 | PSO2 | PSO3 | | | | |
|--------|------|------|------|--|--|--|--|
| C212.1 | 1 | 2 | 2 | | | | |
| C212.2 | 3 | 3 | 2 | | | | |

The mapping values are “-”, “1”, “2” or “3”

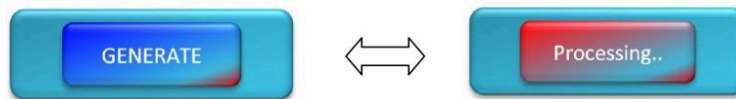
COURSE END SURVEY

COURSE END SURVEY

| C212.1 | C212.2 | C212.3 | C212.4 | C212.5 | C212.6 | | |
|--------|--------|--------|--------|--------|--------|--|--|
| 1 | 1 | 1 | 1 | 1 | 1 | | |

The mapping values are “0”, “1”, “2” or “3”

Press **GENERATE** button after data entry



A error message will be shown in case of incomplete data entry.

ATTAINMENT Worksheet (Auto-generated)

| CO ATTAINMENT MATRIX | | | | | | |
|------------------------|--------|--------|--------|--------|--------|--------|
| Assessment Tools | C212.1 | C212.2 | C212.3 | C212.4 | C212.5 | C212.6 |
| Series 1 | 3 | 2 | - | - | - | - |
| Asst 1 | 3 | - | - | - | - | - |
| Asst 2 | - | - | - | - | 3 | - |
| Series 2 | - | - | 3 | 1 | - | - |
| University | 3 | 3 | 3 | 3 | 3 | 3 |
| CO Direct Attainment | 3 | 2.7 | 3 | 2.4 | 3 | 3 |
| CO Indirect Attainment | 1 | 1 | 1 | 1 | 1 | 1 |
| CO Attainment | 2.6 | 2.36 | 2.6 | 2.12 | 2.6 | 2.6 |
| CO Attainment Avg | 2.48 | | | | | |

} **Assessment Tools with/without University**

Internal: External => 30:70

↔ Course end survey

CO Direct: CO Indirect => 80:20

Average of CO Attainment

| COURSE - PO MATRIX | | | | | | | | | | | | |
|--------------------|------|------|------|------|------|-----|-----|-----|------|------|------|------|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| C212(Mapped) | 2 | 2.83 | 2.83 | 1.8 | 1.8 | 1.5 | - | - | 2 | - | - | 1.67 |
| C212(Attained) | 1.65 | 2.34 | 2.34 | 1.48 | 1.48 | 1.3 | - | - | 1.65 | - | - | 1.36 |
| C212(Feedback) | 3 | 3 | 3 | 3 | 3 | 3 | - | - | 3 | - | - | 3 |

| COURSE - PSO MATRIX | | | | | | | | | | | | |
|---------------------|------|------|------|--|--|--|--|--|--|--|--|--|
| | PSO1 | PSO2 | PSO3 | | | | | | | | | |
| C212(Mapped) | 2.67 | 2.5 | 2.5 | | | | | | | | | |
| C212(Attained) | 2.19 | 2.07 | 2.06 | | | | | | | | | |
| C212(Feedback) | 3 | 3 | 3 | | | | | | | | | |

CO-PO & CO-PSO Mapped (Average of CO-PO & Co-PSO Matrices)

CO-PO & CO-PSO Attained (See Calculation below)

CO-PO & CO-PSO Feedback(comparing mapped and attained values : <33.33% is 1

>=33.33% is 2

>=66.67% is 3 *or as set by the program.*

FEEDBACK WORKSHEET

| | Observations(Why it is not reached?) | Actions Taken(What is to be done?) |
|--------|--------------------------------------|------------------------------------|
| C212.1 | | |
| C212.2 | | |
| C212.3 | | |
| C212.4 | | |
| C212.5 | | |
| C212.6 | | |

Write consolidated comments from students as well as faculty members.

WEAK-BRIGHT WORKSHEET (Auto-generated)

| Roll No | Name | Series 1 | Series 2 |
|---------|------|----------|----------|
| 1 | A | 60 | 60 |
| 2 | B | 21.5 | 54 |
| 3 | C | 53 | 26 |

Brighter Students

Weaker Students

The weaker and brighter students are highlighted. Conduct remedial classes for weaker students and add on classes/advanced topics for brighter students.

CRITERION 2

CO Mark Distribution – Mark distribution across the course outcomes

CO MARK DISTRIBUTION

| | Questions | C212.1 | C212.2 | C212.3 | C212.4 | C212.5 | C212.6 |
|----------|-----------|--------|--------|--------|--------|--------|--------|
| Series 1 | 14 | 27 | 51 | - | - | - | - |
| Asst 1 | 3 | 10 | - | - | - | - | - |
| Asst 2 | 3 | - | - | - | - | 10 | - |
| Series 2 | 14 | - | - | 30 | 48 | - | - |

Taxonomy Mapping – Questions to taxonomy mapping according to Revised Blooms Taxonomy(RBT)

TAXONOMY MAPPING

| | Questions | Remember | Understand | Apply | Analyse | Evaluate | Create |
|----------|-----------|--------------|--------------|--------------|--------------|----------|--------|
| Series 1 | 14 | Q1 Q7 Q13 | Q2 Q8 Q14 | Q3 Q9 | Q4 Q10 | Q5 Q11 | Q6 Q12 |
| Asst 1 | 3 | | | Q1 | Q2 | Q3 | |
| Asst 2 | 3 | Q2 | Q3 | | | | Q1 |
| Series 2 | 14 | Q5 Q11 | Q6 Q12 | Q1 Q7 Q13 | Q2 Q8 Q14 | Q3 Q9 | Q4 Q10 |

Student categories – Bright , Weak and other classifications

STUDENT CATEGORIES

| | >=80% | >=60% and <80% | >=50% and <60% | <50% |
|----------|-------|-------------------|-------------------|------|
| Series 1 | 28 | 16 | 4 | 9 |
| Asst 1 | 54 | 3 | 0 | 0 |
| Asst 2 | 57 | 0 | 0 | 0 |
| Series 2 | 14 | 29 | 3 | 11 |

Calculation

Mapping Levels

Level “-” - No Correlation

Level “1” - Low Correlation

Level “2” - Medium Correlation

Level “3” - High Correlation

Attainment Levels

Level “0” - Not Attained

Level “1” - 50% students achieved cut-off % Marks

Level “2” - 60% students achieved cut-off % Marks

Level “3” - 70% students achieved cut-off % Marks

Consider the sample table for CO Attainment

Course : C403

Course Outcomes : 5

○ Consider the sample table for CO Attainment

| CO ATTAINMENT | | | | | |
|-----------------------|--------|--------|--------|--------|--------|
| Assesment Tool | C403.1 | C403.2 | C403.3 | C403.4 | C403.5 |
| Class Test | 3 | 3 | 3 | 3 | 3 |
| Series Test 1 | - | - | 1 | 1 | 1 |
| Series Test 2 | | | | | |
| Assignment 1 | | | | | |
| Assignment 2 | | | | | |
| Internal Attainment | 3 | 3 | 2 | 2 | 2 |
| University Attainment | 3 | 3 | 3 | 3 | 3 |
| Final CO Attainment | 3 | 3 | 2.7 | 2.7 | 2.7 |

AVERAGE ATTAINMENT
C403 **2.82**

= 2 * 0.3 + 3 * 0.7

Final CO attainment for each CO calculated from : 30% Internal attainment + 70% University attainment

The **PO Attainment** is calculated as follows

| CO-PO Mapping Matrix | | | | | | | | | | | | | Final CO Attainment |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|---------------------|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | |
| C403.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| C403.2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| C403.3 | 2 | 2 | - | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.7 |
| C403.4 | - | 2 | - | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.7 |
| C403.5 | 2 | 2 | - | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.7 |
| C403 | 2 | 2 | 2 | 2 | 1.6 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |

$$\text{PO1 Attainment} = \frac{(2 * \frac{3}{3} + 2 * \frac{3}{3} + 2 * \frac{2.7}{3} + 2 * \frac{2.7}{3})}{4} = 1.9$$

SUMPRODUCT of BLUE & GREEN CELLS . Then take AVERAGE

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---------------|-----|------|-----|------|------|------|------|------|------|------|------|------|
| PO Mapped | 2 | 2 | 2 | 2 | 1.67 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| PO Attainment | 1.9 | 1.88 | 2 | 1.88 | 1.52 | 1.88 | 1.88 | 1.88 | 1.88 | 1.88 | 1.88 | 1.88 |

ICONS



HELP



INFORMATION



PRINT

ABBREVIATIONS

CO – Course Outcomes

PO – Program Outcomes

PSO – Program specific outcomes

NAAC- National Assessment and Accreditation Council

NBA – National Board of Accreditation



USER MANUAL

Accredit360 Software (Lab)

Ver. 1.1

© 2020

ABOUT THE SOFTWARE

The 'Accredit360' software is a single application to generate CO-PO Attainment, student classification(weak and bright) , Feedback analysis and inputs for Criterion 2 of NAAC/NBA.

SOFTWARE REQUIREMENTS

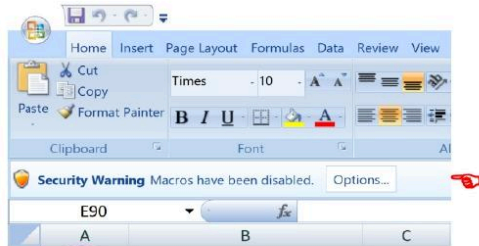
Windows - Excel (version 2007 and above)

STEPS

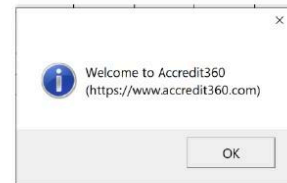
1. Double click the *Theory (Template).xism* file 

If 'MACRO'; is not enabled a warning message will be shown. Then enable MACRO by clicking on the options.

Click on OPTIONS



Enable this content



Once macro is enabled a *welcome message* is shown. Click **OK** to continue

2. Tabulation with worksheets (Input 1, Input 2, Attainment, Feedback, Weak-Bright , C2)

INPUT 1 Worksheet

Fill data in Header Cells(grey)

Choose data from drop-down lists / TYPE(If drop-down list is not available)

– Basic details about the course

| | | | |
|-----------------|--------------------------------|--------------|------|
| Branch | Computer Science & Engineering | Subject | OODP |
| Semester | IV | Course code | C212 |
| Batch | B | No: of COs | 6 |
| No: of students | 57 | No: of POs | 12 |
| University Exam | YES | No: of PSOs | 3 |
| Assessment Year | 2019-20 | Faculty Name | DNJ |



Branch – Department

Semester – I to VI OR I to VIII

Batch – A OR B OR C

No: of students – Registered for the course

University Exam – Only Internal exams(NO), Both Internal & External(YES)

Assessment Year – 1st July 2019 to 30th June 2020 (2019-20)

Subject – Course

Course code – Course code as per University/NBA/NAAC

No: of COs,POs,PSOs – Around 6(Maximum 12), Around 7(Maximum 12) and Around 2 to 4(Maximum 12) respectively

Faculty Name – Faculty code

Choose data from drop-down lists / TYPE(If drop-down list is not available)

– Details about Assessment Tools

| Assessment Tool | Expt Eval | Daily Eval | Model Exam | | | | | | University |
|-----------------------|-----------|------------|------------|--|--|--|--|--|------------|
| No: of Days/Qms | 3 | 4 | 1 | | | | | | I |
| Max Marks | 150 | 400 | 100 | | | | | | |
| Weightage(%) | 30 | 30 | 10 | | | | | | 30 |
| Attainment Cut-off(%) | 50 | 60 | 50 | | | | | | B |
| Weaker Cut-off(%) | 40 | 40 | 66 | | | | | | |
| Brighter Cut-off(%) | 80 | 80 | 6 | | | | | | |

Assessment Tool : Experiment Evaluation OR Daily Evaluation

No: of Questions , Max Marks : Self explanatory

Weightage :

Internal : External => 30 : 70

The external weightage is fixed as 70. Divide the remaining internal weightage of 30 among the internal assessment tools based on marks weightage. The total weightage should be always 100.

Attainment Cut-off(%) :

Internal Evaluation: Average of Internal Marks for the same Course and Program in the previous 3 Academic Years. Fix it as 40 or 45 as this is a revised new syllabus.

End Semester Exam: Average of End Semester Exam in the previous 3 Academic Years.

Fix it as P or D as this is a revised new syllabus.

Weaker Cut-off % : Set as pass mark, 40%

Brighter Cut-off % : Set for brighter students, 70% or 80%

Fill MISSING data after roll number Auto-generation

| Roll No | Name | Expt Eval | |
|---------|------|---|------------------|
| | | Expt 1 | Expt 2 |
| | | CO1, CO2, CO3 CO4, CO5, CO6 CO7, CO8, CO9 CO10, CO11 CO12 | CO5, CO9 CO12 |
| | | Select COs | Select COs |
| | | 50 | 50 |
| 1 | a | 10 | 10 |
| 2 | b | 20 | 20 |
| 3 | c | 10 | 20 |

Assessment Tool

Assessment Tool No: (Auto - generated)

Course Outcomes (Drop down list)

Select COs ⇒ Pickup COs

| Expt Eval | |
|-----------------------|--|
| Expt 1 | |
| CO1, CO4, CO5 CO11 | |
| Pickup COs | |
| CO.1 | |
| CO.2 | |
| CO.3 | |
| CO.4 | |
| CO.5 | |
| CO.6 | |
| CO.7 | |
| CO.8 | |
| CO.9 | |
| CO.10 | |
| CO.11 | |
| CO.12 | |

FILL Name and Marks. Copy and paste options are allowed.
 Select COs will become Pickup Cos on mouseclick as illustrated above.

INPUT 2 Worksheet

Enter data in below three matrices

CO-PO MAPPING MATRIX

CO-PO MAPPING MATRIX

| Sl.No | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| C212.1 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | - | 1 |
| C212.2 | 2 | 3 | 3 | 1 | 1 | - | - | - | 2 | - | - | 2 |

The mapping values are “-”, “1”, “2” or “3”

CO-PSO MAPPING MATRIX

CO-PSO MAPPING MATRIX

| Sl.No | PSO1 | PSO2 | PSO3 | | | | |
|--------|------|------|------|--|--|--|--|
| C212.1 | 1 | 2 | 2 | | | | |
| C212.2 | 3 | 3 | 2 | | | | |

The mapping values are “-”, “1”, “2” or “3”

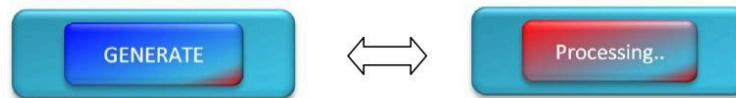
COURSE END SURVEY

COURSE END SURVEY

| C212.1 | C212.2 | C212.3 | C212.4 | C212.5 | C212.6 | | |
|--------|--------|--------|--------|--------|--------|--|--|
| 1 | 1 | 1 | 1 | 1 | 1 | | |

The mapping values are “0”, “1”, “2” or “3”

Press **GENERATE** button after data entry



🔴 A error message will be shown in case of incomplete data entry.

ATTAINMENT Worksheet (Auto-generated)

| CO ATTAINMENT MATRIX | | | | | | |
|------------------------|--------|--------|--------|--------|--------|--------|
| Assessment Tools | C212.1 | C212.2 | C212.3 | C212.4 | C212.5 | C212.6 |
| Series 1 | 3 | 2 | - | - | - | - |
| Asst 1 | 3 | - | - | - | - | - |
| Asst 2 | - | - | - | - | 3 | - |
| Series 2 | - | - | 3 | 1 | - | - |
| University | 3 | 3 | 3 | 3 | 3 | 3 |
| CO Direct Attainment | 3 | 2.7 | 3 | 2.4 | 3 | 3 |
| CO Indirect Attainment | 1 | 1 | 1 | 1 | 1 | 1 |
| CO Attainment | 2.6 | 2.36 | 2.6 | 2.12 | 2.6 | 2.6 |
| CO Attainment Avg | 2.48 | | | | | |

} **Assessment Tools with/without University**

Internal: External => 30:70

↔ Course end survey

CO Direct: CO Indirect => 80:20

Average of CO Attainment

| COURSE - PO MATRIX | | | | | | | | | | | | |
|--------------------|------|------|------|------|------|-----|-----|-----|------|------|------|------|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| C212(Mapped) | 2 | 2.83 | 2.83 | 1.8 | 1.8 | 1.5 | - | - | 2 | - | - | 1.67 |
| C212(Attained) | 1.65 | 2.34 | 2.34 | 1.48 | 1.48 | 1.3 | - | - | 1.65 | - | - | 1.36 |
| C212(Feedback) | 3 | 3 | 3 | 3 | 3 | 3 | - | - | 3 | - | - | 3 |

| COURSE - PSO MATRIX | | | | | | | | | |
|---------------------|------|------|------|--|--|--|--|--|--|
| | PSO1 | PSO2 | PSO3 | | | | | | |
| C212(Mapped) | 2.67 | 2.5 | 2.5 | | | | | | |
| C212(Attained) | 2.19 | 2.07 | 2.06 | | | | | | |
| C212(Feedback) | 3 | 3 | 3 | | | | | | |

CO-PO & CO-PSO Mapped (Average of CO-PO & Co-PSO Matrices)

CO-PO & CO-PSO Attained (See Calculation below)

CO-PO & CO-PSO Feedback(comparing mapped and attained values : <33.33% is 1

>=33.33% is 2

>=66.67% is 3 *or as set by the program.*

FEEDBACK WORKSHEET

| | Observations(Why it is not reached?) | Actions Taken(What is to be done?) |
|--------|--------------------------------------|------------------------------------|
| C212.1 | | |
| C212.2 | | |
| C212.3 | | |
| C212.4 | | |
| C212.5 | | |
| C212.6 | | |

Write consolidated comments from students as well as faculty members.

WEAK-BRIGHT WORKSHEET (*Conduct this lab exam at middle of the lab course*)**INTERNAL LAB EXAMINATION MARK**

| | | | |
|-----------------|---------|--------------|--------|
| Semester | III | Subject | ppp |
| Batch | A | Course code | EC2033 |
| Assessment Year | 2019-20 | Faculty Name | ADJ |

| Roll No | Name | Test Mark |
|---------|------|-----------|
| 1 | a | 80 |
| 2 | b | 20 |
| 3 | c | 80 |
| 4 | pp | 80 |

Brighter Student($\geq 80\%$)
Weaker Student($< 50\%$)

The maximum marks should be entered by the user(Eg:-80 Marks). The weaker and brighter students are highlighted. Conduct remedial classes for weaker students and add on classes/advanced topics for brighter students.

CRITERION 2

CO Mark Distribution – Mark distribution across the course outcomes

CO MARK DISTRIBUTION

| | Questions | C212.1 | C212.2 | C212.3 | C212.4 | C212.5 | C212.6 |
|----------|-----------|--------|--------|--------|--------|--------|--------|
| Series 1 | 14 | 27 | 51 | - | - | - | - |
| Asst 1 | 3 | 10 | - | - | - | - | - |
| Asst 2 | 3 | - | - | - | - | 10 | - |
| Series 2 | 14 | - | - | 30 | 48 | - | - |

Taxonomy Mapping – Questions to taxonomy mapping according to Revised Blooms Taxonomy(RBT)

TAXONOMY MAPPING

| | Questions | Remember | Understand | Apply | Analyse | Evaluate | Create |
|----------|-----------|-----------|------------|-----------|-----------|----------|--------|
| Series 1 | 14 | Q1 Q7 Q13 | Q2 Q8 Q14 | Q3 Q9 | Q4 Q10 | Q5 Q11 | Q6 Q12 |
| Asst 1 | 3 | | | Q1 | Q2 | Q3 | |
| Asst 2 | 3 | Q2 | Q3 | | | | Q1 |
| Series 2 | 14 | Q5 Q11 | Q6 Q12 | Q1 Q7 Q13 | Q2 Q8 Q14 | Q3 Q9 | Q4 Q10 |

Student categories – Bright , Weak and other classifications

STUDENT CATEGORIES

| | $\geq 80\%$ | $\geq 60\%$ and $< 80\%$ | $\geq 50\%$ and $< 60\%$ | $< 50\%$ |
|----------|-------------|-----------------------------|-----------------------------|----------|
| Series 1 | 28 | 16 | 4 | 9 |
| Asst 1 | 54 | 3 | 0 | 0 |
| Asst 2 | 57 | 0 | 0 | 0 |
| Series 2 | 14 | 29 | 3 | 11 |

Calculation

Mapping Levels

Level “-” - No Correlation

Level “1” - Low Correlation

Level “2” - Medium Correlation

Level “3” - High Correlation

Attainment Levels

Level “0” - Not Attained

Level “1” - 50% students achieved cut-off % Marks

Level “2” - 60% students achieved cut-off % Marks

Level “3” - 70% students achieved cut-off % Marks

Consider the sample table for CO Attainment

Course : C403

Course Outcomes : 5

○ Consider the sample table for CO Attainment

| CO ATTAINMENT | | | | | |
|-----------------------|--------|--------|--------|--------|--------|
| Assesment Tool | C403.1 | C403.2 | C403.3 | C403.4 | C403.5 |
| Class Test | 3 | 3 | 3 | 3 | 3 |
| Series Test 1 | - | - | 1 | 1 | 1 |
| Series Test 2 | | | | | |
| Assignment 1 | | | | | |
| Assignment 2 | | | | | |
| Internal Attainment | 3 | 3 | 2 | 2 | 2 |
| University Attainment | 3 | 3 | 3 | 3 | 3 |
| Final CO Attainment | 3 | 3 | 2.7 | 2.7 | 2.7 |

AVERAGE ATTAINMENT
C403 **2.82**

= 2 * 0.3 + 3 * 0.7

Final CO attainment for each CO calculated from : 30% Internal attainment + 70% University attainment

The **PO Attainment** is calculated as follows

| CO-PO Mapping Matrix | | | | | | | | | | | | | Final CO Attainment |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|---------------------|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | |
| C403.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| C403.2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| C403.3 | 2 | 2 | - | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.7 |
| C403.4 | - | 2 | - | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.7 |
| C403.5 | 2 | 2 | - | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.7 |
| C403 | 2 | 2 | 2 | 2 | 1.6 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |

$$\text{PO1 Attainment} = \frac{(2 * \frac{3}{3} + 2 * \frac{3}{3} + 2 * \frac{2.7}{3} + 2 * \frac{2.7}{3})}{4} = 1.9$$

SUMPRODUCT of BLUE & GREEN CELLS . Then take AVERAGE

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---------------|-----|------|-----|------|------|------|------|------|------|------|------|------|
| PO Mapped | 2 | 2 | 2 | 2 | 1.67 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| PO Attainment | 1.9 | 1.88 | 2 | 1.88 | 1.52 | 1.88 | 1.88 | 1.88 | 1.88 | 1.88 | 1.88 | 1.88 |

ICONS



HELP



INFORMATION



PRINT

ABBREVIATIONS

CO – Course Outcomes

PO – Program Outcomes

PSO – Program specific outcomes

NAAC- National Assessment and Accreditation Council

NBA – National Board of Accreditation



USER MANUAL

Accredit360 Software (Consolidated)

Ver. 1.1

© 2020


ABOUT THE SOFTWARE

The 'Accredit360' software(Consolidated) is a single application to generate the consolidated CO-PO Attainment given the final Internal marks/grades, External marks/grades and CO-PO mapping levels for NAAC.

SOFTWARE REQUIREMENTS

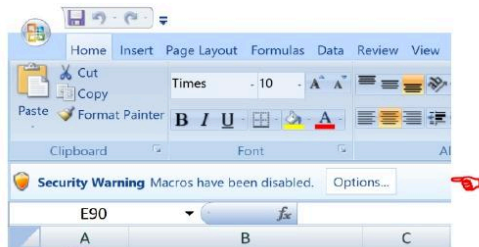
Windows - Excel (version 2007 and above)

STEPS

1. Double click the **UG/PG... (Template).xism** file 

If 'MACRO'; is not enabled a warning message will be shown. Then enable MACRO by clicking on the options.

Click on **OPTIONS**.



Choose **Enable this content**.



Click **OK** to continue.

2. Fill data in Header Cells(grey)
 - a. Choose data from drop-down lists / TYPE
 - b. Fill MISSING data after Auto-generation



CO-PO ATTAINMENT SHEETS (Semester wise - Consolidated)

ST.XAVIER'S COLLEGE FOR WOMEN, Aluva

| | |
|-----------------|--------------|
| Department | Physics |
| Program | B.Sc Physics |
| Semester | IV |
| No. of Students | 6 |
| Batch | A |

| | |
|----------------|------|
| No. of POs | 6 |
| No. of PSOs | 6 |
| No. of Courses | 10 |
| Course Code | P101 |
| No. of COs | 5 |



| | | | | | | |
|--|------|------|------|------|------|------|
| | P102 | P103 | P104 | P105 | P106 | P107 |
| | 3 | 3 | 3 | 4 | 4 | 5 |

| Roll No | Name | C101 | | C102 | | C103 | |
|---------|------|------|------|------|------|------|------|
| | | Intl | Extl | Intl | Extl | Intl | Extl |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |

| Roll No | Name | C101 | | C102 | | C103 | |
|---------|------|------|------|------|------|------|------|
| | | Intl | Extl | Intl | Extl | Intl | Extl |
| 10 | | | | | | | |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |

| Roll No | Name | C101 | | C102 | | C103 | |
|---------|------|------|------|------|------|------|------|
| | | Intl | Extl | Intl | Extl | Intl | Extl |
| 10 | | | | | | | |
| 50 | | | | | | | |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |

Also FILL Name and Marks/Grades.

3. Press **GENERATE** after data entry



4. The Attainment Level and Final Attainment are calculated (UG)

| Roll No | Name | C101 | | C102 | | C103 | |
|---------|------------------|------|------|------|------|------|------|
| | | Intl | Extl | Intl | Extl | Intl | Extl |
| | | 10 | 10 | 10 | 10 | 10 | 10 |
| | | 50 | 50 | 50 | 50 | 50 | 50 |
| 1 | A | 10 | 10 | 10 | 10 | 10 | 10 |
| 2 | B | 10 | 10 | 10 | 10 | 10 | 10 |
| 3 | C | 10 | 10 | 10 | 10 | 10 | 10 |
| 4 | D | 10 | 10 | 10 | 10 | 10 | 10 |
| 5 | E | 10 | 10 | 10 | 10 | 10 | 10 |
| 6 | F | 10 | 10 | 10 | 10 | 10 | 10 |
| | ATTAINMENT COUNT | 6 | 6 | 6 | 6 | 6 | 6 |
| | ATTAINMENT % | 100 | 100 | 100 | 100 | 100 | 100 |
| | ATTAINMENT LEVEL | 3 | 3 | 3 | 3 | 3 | 3 |
| | ATTAINMENT | 3 | | 3 | | 3 | |

5. Enter CO-PO & CO-PSO Mapping in the highlighted cells

C101

CO-PO MAPPING

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|------------|-----|-----|-----|-----|-----|-----|-----|
| CO1 | | | | | | | |
| CO2 | | | | | | | |
| CO3 | | | | | | | |
| Mapping | | | | | | | |
| Attainment | | | | | | | |

CO-PSO MAPPING

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|------------|------|------|------|------|------|------|
| CO1 | | | | | | |
| CO2 | | | | | | |
| CO3 | | | | | | |
| Mapping | | | | | | |
| Attainment | | | | | | |

6. Mapping and Attainment values are calculated

C101

CO-PO MAPPING

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|------------|-----|-----|-----|-----|-----|-----|-----|
| CO1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Mapping | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Attainment | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

CO-PSO MAPPING

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|------------|------|------|------|------|------|------|
| CO1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO3 | 1 | 1 | 1 | 1 | 1 | 1 |
| Mapping | 1 | 1 | 1 | 1 | 1 | 1 |
| Attainment | 1 | 1 | 1 | 1 | 1 | 1 |

7. COPY the Consolidated Output sheet

| PO MAPPING (Consolidated) | | | | | | | |
|---------------------------|-----|-----|-----|-----|-----|-----|-----|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
| C101 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C102 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C103 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| PO ATTAINMENT (Consolidated) | | | | | | | |
|------------------------------|-----|-----|-----|-----|-----|-----|-----|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
| C101 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C102 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| C103 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Calculation

Attainment Levels

Level "0" - Not Attained

Level "1" - 50% students achieved cut-off %(UG) or cut-off grade(PG)

Level "2" - 60% students achieved cut-off %(UG) or cut-off grade(PG)

Level "3" - 70% students achieved cut-off %(UG) or cut-off grade(PG)

Consider the sample table for CO Attainment

● Course : C403

● Course Outcomes : 5

Course Outcomes : 5

| CO ATTAINMENT for UG Courses | | | | | |
|--------------------------------|--------|--------|--------|--------|--------|
| | C403.1 | C403.2 | C403.3 | C403.4 | C403.5 |
| Internal Attainment | 2 | 2 | 2 | 2 | 2 |
| University/External Attainment | 3 | 3 | 3 | 3 | 3 |
| Final CO Attainment | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |

Note 1 :- Only Internal and External marks available

Note 2 :- Uniform distribution of attainment to all COs

UG Courses

Internal : External = 20:80

PG courses

Internal : External = 25:75

| CO-PO Mapping Matrix | | | | | | | | Final CO |
|----------------------|------|------|------|------|------|------|------|------------|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | Attainment |
| C403.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.8 |
| C403.2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.8 |
| C403.3 | 2 | 2 | - | 2 | 1 | 2 | 2 | 2.8 |
| C403.4 | - | 2 | - | 2 | 2 | 2 | 2 | 2.8 |
| C403.5 | 2 | 2 | - | 2 | 1 | 2 | 2 | 2.8 |
| C403 (Mapped) | 2 | 2 | 2 | 2 | 1.6 | 2 | 2 | |
| C403 (Attained) | 1.87 | 1.87 | 1.87 | 1.87 | 1.49 | 1.87 | 1.87 | |

$$PO1 \text{ Attainment} = \frac{(2 * \frac{2.8}{3} + 2 * \frac{2.8}{3} + 2 * \frac{2.8}{3} + 2 * \frac{2.8}{3})}{4} = 1.87$$

Similarly, find the PO Attainment of all POs.

ICONS



HELP



INFORMATION



PRINT

ABBREVIATIONS

CO – Course Outcomes

PO – Program Outcomes

PSO – Program specific outcomes

NAAC- National Assessment and Accreditation Council
