



SRI RAMAKRISHNA
COLLEGE OF ARTS & SCIENCE

**AN AUTONOMOUS INSTITUTION
(FORMERLY SNR SONS COLLEGE)**

Affiliated to Bharathiar University

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AN ISO 9001:2015 Certified Institution

Outcome Based Education (OBE) Manual

SRCAS/CP/M06

With effect from

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Authorized by (Principal)	
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PRINCIPAL
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PREFACE

This manual is a reference to help faculty, staff and stakeholders to understand the Outcome Based Education (OBE) system implemented at Sri Ramakrishna College of Arts and Science (SRCAS). The manual serves as valuable guidelines for the faculty to develop an assessment plan in the process to measure the outcome of the students during their course of study and also after their graduation. The manual outlines the process involved in developing a constructive curriculum development and content delivery or teaching plan.

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1. DEFINITIONS

Graduates Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. GAs form a set of individually assessable outcomes of the programme.

Programme Educational Objectives (PEOs) describe the career and professional developments of graduates, which are to be assessed after 2 or 3 years of graduation.

Programme Outcomes (POs) explain the Knowledge, Skills and Attitude that the students are expected to attain upon graduation.

Course Outcomes (COs) outline the course specifications to be acquired by students.

Knowledge, Skills and Attitude (KSA) are the three types of behavior elements, also known as educational activities that are selected from Bloom's taxonomy.

Course Syllabus (CS) provides a comprehensive description of a curriculum offered by the respective programme of study from Board of Studies.

Faculty Record Book (FRB) is a teaching-learning plan developed by the Course Coordinator for a semester.

Comprehensive Examination Analysis (CEA) is an in-house developed tool to measure the achievement of COs and POs.

Course End Survey Analysis (CESA) (Indirect method) is a technique to measure the attainment of COs and POs indirectly from the components of course outcomes.

Course End Analysis (CEA) (Direct method) is a technique to measure the attainment of COs and POs directly from levels of internal components.

2. VISION AND MISSION

2.1 Vision

“To Explore, Experiment and Excel in the field of Higher Education globally“.

The college stands for academic excellence, enrichment of skills and character formation so as to produce intellectually inspired and morally upright youth to meet the global challenge.

2.2 Mission

“Our mission is to educate the youth to meet the global challenges and enable them to excel in the field of their choice and instill in them a sense of social responsibility through enriched trainings and research”.

The Mission of the college defines the distinctive characteristics in terms of addressing the needs of the society, through enriched training and research, the college prepares the young generation to meet global challenges. The responsibility instilled in them turns them as valuable citizens of the society.

2.3 Graduate Attributes (GAs)

Graduate Attributes are derived to accomplish the vision and mission of our College and to acquire during the period of course:

1. Demonstrate English proficiency in the industry/enterprise/community by conveying ideas clearly, effectively and professionally to the satisfaction of all the stakeholders.
2. Acquire problem solving, initiative and enterprise skills that contribute to productive and innovative outcomes.
3. Develop and update domain knowledge relevant to the chosen career to succeed in highly competitive and rapidly changing work environments.
4. Apply technology competently and appropriately as and when required.

5. Obtain the ability to lead a team or develop group behaviour in order to work in a team.
6. Identify and comprehend the interrelationship among environmental, social and economic sustainabilities.
7. Recognize and respect the role of cultural differences and diversity in work and social contexts.
8. Articulate and apply personal ethical actions in professional and vocational situations.
9. Show a commitment to sustained and ongoing personal and career-related learning.

Graduates Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. GAs form a set of individually assessable outcomes of the programme.

3. OUTCOME BASED EDUCATION (OBE)

3.1 OBE DEFINITION

Outcome-Based Education (OBE) is an academic process and approach focuses in developing expected outcomes (i.e. Knowledge, Skills and Attitude) for the students to achieve during graduation.

3.2 OBE IMPLEMENTATION

Implementing OBE is important process in order:

- To ensure a well-structured education system (i.e. PEOs, POs, COs, Course plan, CS, FRB, CEA and CESA) is achieved.
- To support accreditation process from NAAC.

3.3 OBE IMPLEMENTED

The OBE was initially implemented from 2016 onwards, the implementation of OBE is based on teaching-learning approaches (i.e. delivery and assessment) in compliance with the FRB book. The curriculum must be designed using the constructive alignment approach.

3.4 OBE INVOLVEMENT

All faculty members (i.e. academic, technical and supporting staff) are involved in the OBE implementation.

Concerned Programme Coordinator is responsible to monitor the implementation of OBE in the teaching-learning and evaluation activities by the faculty member.

4. PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

4.1 PEO DEFINITION

Programme Educational Objectives (PEOs) describe the career and Professional developments of graduates, which are to be assessed after 2 or 3 years of graduation.

4.2 LIST of PEO

List of PEO can be found in the followings:

www.srcas.ac.in

Disseminated in Classrooms, Departments and LMS.

5. PROGRAMME OUTCOMES (PO)

5.1 PO DEFINITION

Programme Outcomes (PO) are the Knowledge, Skills and Attitude students should possess during graduation.

5.2 LIST of POs

List of POs can be found in the followings:

www.srcas.ac.in

Disseminated in Classrooms, Departments and LMS.

5.3 IMPORTANT FOR FACULTY TO KNOW THE POs

The POs are important as a guideline when developing or revising the course outcomes. Knowing the POs helps the faculty in designing the appropriate delivery and assessment methods.

6. COURSE OUTCOMES (COs)

6.1 COs DEFINITION

COs are the statements of Knowledge/ Skills/ Attitude that students are expected to know, understand and perform, as a result from their learning experiences.

6.2 RELATION BETWEEN POs AND COs

The COs are mapped to at least one of the POs. When designing the COs, faculty handling the course should map their COs to the appropriate PO in order to ensure that all POs are delivered throughout the period of study.

6.3 WELL WRITTEN COs

Well written CO facilitates the faculty in measuring the achievement of the CO at the end of the semester. It also helps the faculty in designing suitable delivery and assessment methods to achieve the designed COs.

6.4 TO DEVELOP OR REVISE COs

New COs are developed when a new course is offered.

Existing COs are revised upon feedback from stakeholders or during the 2 or 3 years cycle of Curriculum Review.

6.5 RULES TO DEVELOP COs

The rules to develop COs are SMART.

S – Specific: Student can state what they should be able to achieve from reading the outcomes.

M – Measurable: Student can be able to recognize when they have Achieved through the outcomes.

A – Achievable: It is genuinely possible to complete the outcomes in the time and with the resources available.

R – Realistic: Outcomes are appropriate for the student.

T – Time bounded: Outcomes have a time limit for completion.

To follow the SMART rules, COs are constructed by four elements of ABCD, where;

A - Audience B - Behavior

C - Condition D - Degree

Selection of behavior elements is important. There are three types of behavior elements or also known as educational activities: Knowledge, Skills and Attitude (KSA). Appropriate behavior elements are selected from the Bloom's Taxonomy. Bloom's Taxonomy primarily provides course coordinator with a focus for developing their course learning objectives. It can be used to increase student understanding of the learning process. Faculty can understand the complex cognitive development and how lower - level skills build into higher-order thinking (e.g., recalling facts and comprehending previous problems allows a student to apply their experience to similar problems). The domains are classified into three levels and numbered from Level 1 to 3 depending on the ability expected from the students. For example, **L1 – Base Level is the lowest level, L2 – Application Level is the medium level and L3 – Advance thinking level is the high level of ability** expected from the students.

6.6 EVALUATION PROCESS (EP)

All Question Papers should follow the given levels

- Base Level (Remembering and Understanding)
- Application Level (Applying)
- Advance Thinking Level (Analyzing, Evaluating and Creating)

Base Level (Remembering and Understanding)

Remembering

The lowest level of questions requires students to recall information from the course content.

Knowledge questions usually require students to identify information in basically the same form it was presented.

Keywords for Question types				
Who	Where	Define	Match	Omit
What	Which	Label	Name	How
Why	Choose	Show	Relate	List
When	Find	Spell	Tell	Recall

Understanding

Understanding of facts and ideas by Comprehending, organizing, comparing, translating, interpolating and interpreting in their own words.

The questions go beyond simple recall and require students to combine data together.

Keywords for Question types			
Compare	Explain	Outline	Summarize
Contrast	Extend	Relate	Show
Demonstrate	Illustrate	Rephrase	Classify
Interpret	Infer	Translate	Select

Application Level (Applying)

Applying

Students have to solve problems by using/applying a concept learned in the classroom. Students must use their knowledge to determine a correct response.

Keywords for Question types			
Compare	Function	Motive	Take part in
Conclusion	Interference	Relationships	Test for
Contrast	Inspect	Simplify	Theme
Discover	List out	Survey	Tell

Advanced Thinking Level (Analyzing, Evaluating and Creating)

Analyzing

Analyzing the question is one that asks the students to break down something into its component parts.

Analyzing requires students to identify reasons, causes, or motives and reach conclusions or generalizations.

Keywords for Question types			
Analyze	Dissect	Agree	Function
Assume	Distinguish	Appraise	Interference
Categorize	Divide	Assess	Inspect
Classify	Examine	Award	List out

Evaluating

Evaluation requires an individual to make a judgment about something. Questions to be asked to judge the value of an idea, a character, a work of art, or a solution to a problem.

Students are engaged in decision-making and problem-solving at this level. Evaluation questions do not have single right answers.

Keywords for Question types					
Choose	Decide	Disprove	Explain	Prove	Judge
Measure	Deduct	Dispute	Importance	Rate	Justify
Conclude	Defend	Estimate	Influence	Opinion	Recommend
Criteria	Determine	Evaluate	Prioritize	Perceive	Value

Creating

The questions of this category challenge students to get engaged in creative and original thinking.

Developing original ideas and problem solving skills are developed at this stage. Various potential responses for creating type questions.

Keywords for Question types					
Adapt	Compose	Develop	Imagine	Modify	Predict
Build	Construct	Elaborate	Improve	Original	Propose
Change	Create	Formulate	Invent	Originate	Solution
Combine	Design	Happen	Maximize	Test	Solve

7. PEDAGOGY FOR THEORY AND PRACTICAL COURSE

7.1 Before Semester Starts

In Faculty Record Book (FRB), the Course coordinator should design the Course Syllabus expected to be delivered throughout the course.

Topics to be taught beyond the Course Syllabus should also be planned.

Learning Outcomes should be framed and aligned with the Course Outcomes (COs) to follow the Bloom's taxonomy level.

For each Learning Outcome, the following are to be planned for course delivery:

1. Content of delivery
2. Development and usage of ICT tool methods (Teaching Aids and Teaching Methods) and
3. The assessment frequency.

The information should be recorded in the FRB.

Teaching Aids	Teaching Methods	Teaching Methods
Video (V)	Lecture (L)	Demonstration (D)
PowerPoint Presentation (PPT)	Group Discussion (GD)	Blended / Flipped Classrooms
Models (M)	Seminar (S)	Industrial Visit (IV)
Charts (C)	Quiz (Q)	Games (G) / Role play (RP)
Animation (A)	Team Teaching (TT)	Others

Syllabus should be distributed to students to know the responsibility in achieving the Course outcomes.

Special Academic Activities should be planned based on the course syllabus.

7.2 During the Semester

After conducting each assessment, analysis report should be filled in the FRB. Record of Attendance for the students is maintained for the course delivery. Special Academic Activities are organized based on the course syllabus. Counseling report should be maintained for the students showing the performance below the expected percentage (< 75%).

7.3 End of Semester

The FRB book is evaluated by Programme Coordinator to analyze the effectiveness of teaching and learning activities (that have been conducted), Identify whether the content, delivery and assessment methods conducted throughout the semester is aligned with teaching plan constructed at the beginning of semester.

The Course End Survey Analysis is carried out at the end of the semester.

8. CLASS CONDUCTING METHODS

The Faculty can conduct their classes using student-centered learning methods.

8.1 Content delivery methods

Theory: The Faculty delivers the course in lecture hall for a maximum of 5 hours per week for 12 weeks. 15 hours of lecture is equivalent to 1 credit.

Laboratory: The Faculty delivers the entire course or few topics in one course through laboratory session or by conducting demonstration experiments, for the case where entire syllabus in a course is delivered through laboratory or experimental demo works.

Project: The Faculty guides the students to solve a problem or design a new thinking. The Projects can be completed in an individual or in group within the duration given.

8.2 Student-Centered Learning Methods

Problem Based Learning (PBL): The Faculty can use the PBL method to deliver the whole syllabus in the course or choose few topics to be delivered through PBL method. The direct faculty-student contact hour is minimum where the students spend more time to do group discussions. The Faculty observes the discussion sessions and evaluates the students.

Project-oriented Based Learning (PoBPL): PoBPL is an approach similar to PBL where the students are given problems to analyze. PoPBL is a Project based instead of Topic Based. The Analysis comprises of bigger problem that may consists of small problems. In PoPBL, the students learn new knowledge as well as apply previous knowledge.

Modular Approach: Modular Approach is an approach where the Faculty uses a module to deliver the course content. Module is a unit of education or instruction with a relatively low student-to-faculty ratio, in which a single topic or a small section of a broad topic is studied for a given period of time.

8.3 Case Studies

Case study approach is an approach where the students are given a problem to discuss and analyze.

In this approach, the knowledge acquirers are the students who are the one initiate and participate actively in the acquisition process while faculty facilitates and acts as a guide.

8.4 ICT tools

ICTs are web-based platforms that bring together tools and materials to support learning, including: content files and multi-media resources relevant to the course of study; assessment tools that may permit students to complete online quizzes or submit assignments; communication tools such as mail, chat and asynchronous discussion forums; course administration tools that allow instructors to record and store grades, make announcements and display course deadlines and learning management tools that allow students to review grades and track their progress like Google Classroom, Moodle, Kahoot, Hot Potatoes, Plickers, etc.

8.4.1 Google Classroom

Google Classroom is incorporated into the curriculum to connect and facilitate communications between the instructors and students about the course. It is easy to create a class and invite learners, help instructors to distribute assignments, allows teacher to create, review and mark assignments. It also helps the students to see their progress about the submission of assignments, seminars, discussions and class materials in one place.

8.4.2 Moodle

Moodle is included into the curriculum as a type of quiz module that creates all familiar forms of assessment like true or false, fill ups, multiple choice, multiple answers, matching, order the statements, etc. This module is used as the evaluation pattern in the Continuous

Internal Assessment (CIA) and as the online examination in the Comprehensive Examinations (CE).

8.4.3 Kahoot

Kahoot is a free game-based learning platform, as educational technology, designed to be accessible to classrooms and other learning environments worldwide. Kahoot is an integrated into the curriculum as a formative assessment to monitor each student's progress towards learning objectives, identify their strengths and weaknesses, more challenging learning opportunities, and a review of foundational knowledge for that subject.

8.5 Online Courses

The online course aimed at unlimited participation and open access via the web. It provide interactive courses with user forums to support community interactions among students, professors, and teaching assistants, as well as immediate feedback to quick quizzes and assignments. The inmates are mandated to complete the online certification courses in anyone of the forums like NPTEL, SWAYAM, COURSERA, etc. To enhance their innovative learning out of the classroom environment.

9. ASSESSMENT METHODS

The assessment methods are made either in the entry in Google classroom or Continuous Internal Assessment (CIA) with the course plan. The following methods can be used to assess the students:

9.1 Quiz (Activity)

Quiz questions must be within the designed course outcomes. The distribution of marks depends on the Faculty decision. The Faculty uses ICT tools.

9.2 Assignment (Google Classroom)

Assignment questions must be within the designed course outcomes. The assignment can be either individual or group. The Students need to post their assignment in the Google classroom.

9.3 Video Seminar (Google Classroom)

Video Seminar Presentation comes up when the course outcomes emphasize on communication skills. The presentation should be uploaded in Google classroom.

9.4 Project

The Projects may be planned based on the specialization and the field of interest in the concern streams within the designed course outcomes. The distribution of marks depends on the student viva ability. The report submitted will be evaluated by the external member.

9.5 CIA Test

CIA Test questions must be within the designed course outcomes. The distribution of marks depends on objective type or descriptive type examination.

9.6 Model Exam

The model exams are conducted in descriptive method of paper presentation. This is usually implemented in order to get the students attention as pre semester examination.

9.7 Comprehensive Examination

The Final exam questions must be within the designed course outcomes. The designed questions need to utilize Bloom's taxonomy to ensure the questions are measureable. The level L1 (Remembering and Understanding) questions carries 30%, level L2 (Applying) questions carries 30% and level L3 (Analyzing, Evaluating and Creating) questions carries 40% for theory subject. It may varies in accordance with type of course.

10. COs AND POs MAPPING

The various correlation levels for the measurement of COs and POs mapping is measured in four scale:

“-“ is No Correlation, 1 is Slight Correlation, 2 is Moderate Correlation and 3 is Substantial Correlation. The format for CO and PO mapping as follows:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	2	-	-
CO2	-	1	-	-	-	2	-	-	-	-
CO3	-	-	3	-	-	-	-	-	1	-
CO4	-	-	-	2	-	-	-	-	-	3
CO5	-	-	-	-	1	-	2	-	-	-

Mapping analysis of each course should be maintained in the department. The questions are framed in such a way that it should satisfy Bloom's Taxonomy, wherein each question is mapped to the appropriate course outcome of the respective course, which is evaluated based on the set attainment levels by the department.

11. ATTAINMENT OF COURSE OUTCOME

11.1 Assessment and Attainment methods

Assessment methods are categorized into two as direct method and indirect method to assess COs and POs.

CO assessment methods are employed

Direct assessment method and indirect assessment method are considered for 80% and 20% weightages respectively.

11.2 Indirect Assessment method – Course End Survey Analysis (CESA)

Course End Survey Analysis (CESA) (Indirect method) is a technique to measure the attainment of COs and POs indirectly from the components of course outcomes.

The indirect method done through surveys from the stakeholders (Alumni, Parents and Employers) to reflect their views on student's learning after 2 or 3 years of graduation. The institute assesses opinions or thoughts about graduate's knowledge or skills by different stakeholders.

The Attainment of Course Outcome at the end of the every semester is received from the students. For this, a particular template is followed. The students need to fill the template and give back to the course coordinator.

Sum = Total score given by all students for CO

Average = Sum / Total no. of Students

Percentage of CO = $(\text{Sum} / (\text{Total no. of students} * 4)) * 100$

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ATTAINMENT OF COURSE OUTCOME
Course End Survey

Degree & Branch: _____ **Regulation:** _____
Name of the Course: _____ **Course Code:** _____
Name of the Course Instructor: _____ **Designation:** _____
Course Outcome:

CO1:
CO2:
CO3:
CO4:
CO5:

Rate the understanding level of the following (Tick the appropriate box)

CO1.1				
Excellent(4)	Good(3)	Moderate(2)	Fair(1)	
CO1.2				
Excellent(4)	Good(3)	Moderate(2)	Fair(1)	
CO2.1				
Excellent(4)	Good(3)	Moderate(2)	Fair(1)	
CO2.2				
Excellent(4)	Good(3)	Moderate(2)	Fair(1)	
CO3.1				
Excellent(4)	Good(3)	Moderate(2)	Fair(1)	
CO3.2				
Excellent(4)	Good(3)	Moderate(2)	Fair(1)	
CO4.1				
Excellent(4)	Good(3)	Moderate(2)	Fair(1)	
CO4.2				
Excellent(4)	Good(3)	Moderate(2)	Fair(1)	
CO5.1				
Excellent(4)	Good(3)	Moderate(2)	Fair(1)	
CO5.2				
Excellent(4)	Good(3)	Moderate(2)	Fair(1)	

CO1.1	CO1.2	CO2.1	CO2.2	CO3.1	CO3.2	CO4.1	CO4.2	CO5.1	CO5.2
CO1 Average:	CO2 Average:	CO3 Average:	CO4 Average:	CO5 Average:					

Date: _____

Name of the student _____

Signature of the student _____

11.3 Direct Assessment method – Course End Analysis (CEA)

Course End Analysis (CEA) (Direct method) is a technique to measure the attainment of COs and POs directly from levels of internal components.

The direct methods display the student's knowledge and skills from their performance in the continuous internal assessment tests, semester examinations and supporting activities such as seminars, assignments, case study, group discussion, online quiz, etc. These methods provide a sampling of what students know and can do and provide strong evidence of student learning.

11.3.1 Mapping of COs and POs Average

The course outcomes are stated in the syllabus of each course. For every course the course articulation matrix is prepared, which identifies the affinity of each CO with the POs of the programme. From the course articulation matrices of all courses, the programme articulation matrix is prepared. From the attainment values of COs of the courses. The attainment levels of the POs are computed by weighted average using the programme articulation matrix.

11.3.2 Result average in K levels

The average can be calculated based on the correlation levels for the measurement of COs and POs mapping and measured in four scale: '0' is No Correlation, 1 is Slight Correlation, 2 is Moderate Correlation and 3 is Substantial Correlation.

11.3.3 Students feedback on Teachers

The following criteria is considered for the feedback analysis given by the students on course coordinator's method of content delivery:

Criteria
Subject Knowledge (8)
Clear Explanation (8)
Usage of Teaching Tools (PPT, Video, etc.) (4)
Extra Input/Current Trends/Activity (4)
Teacher Student Relationship (4)

Formula for calculations:

$x = \text{Total score obtained for criteria} / \text{Total no. of Students}$

x is converted for four point scale. The rating for the criteria is given as follows:

Point Scale	Grade	Category
3.41 to 4.00	A	Appreciation
3.01 to 3.40	B	Need Improvement
2.51 to 3.00	C	Critical Review
Below 2.50	D	Withdraw

The Attainment of Course Outcome at the end of the every semester is calculated from the average of three criteria's (Mapping of COs and POs Average, Result average in K levels, Students feedback on Teachers). All the three criteria's are given equal weightage.

Sum = Total score of mapping average, Result average and students feedback.

Percentage of CO = $(\text{Sum of three criteria's} / 3) * 100$

Annexure I

Document Name: Outcome Based Education Process

Document no.: SRCAS/CP/D01

