THE KERALA STATE HIGHER EDUCATION COUNCIL

OUTCOME BASED EDUCATION

HANDS ON WORKSHOPS

CONSOLIDATED REPORT WITH SAMPLE OUTCOMES

JUNE 2023

Kerala State Higher Education Council
Outcome Based Education (Hands on Training)
Consolidated Report with Sample Outcomes

.

Documentation Division
June 2023

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Manulal P. Ram

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CHAPTER I

INTRODUCTION

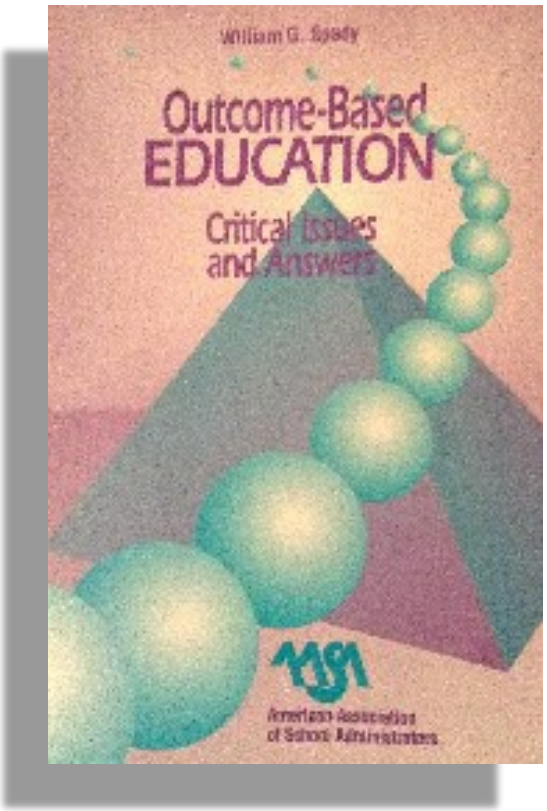
OVERVIEW

Outcome Based Education (OBE) is an approach to education in which decisions about the curriculum and instruction are driven by the *exit learning outcomes* that the student should be displayed at the end of the programme or a course. The fundamental objective is to establish the conditions and opportunities within the system that enable and encourage all students to achieve those essential outcomes. Courses are scientifically structured with insights of continuity, sequence, and integration, appropriate for effective learning. The Kerala State Higher Education Council (KSHEC) under the chairmanship of Prof. Rajan Gurukkal has actively engaged in spreading the curricular model of OBE through a series of hands-on-training programmes since 2017.

The educational program seeks to attain their purpose through Program Outcomes (Graduate Attributes) as identified by the University/Autonomous Institution and Program Specific Outcomes chosen by the Department offering the program. Program Outcomes are what the students of any undergraduate general program are required to attain at the time of graduation. These relate to the knowledge, skills and behavior the students acquire through the program.

It is acceptable fact that there is a gap exists between the current state of learning outcomes and what is required in our society. It must be bridged through undertaking major reforms that bring the highest quality, equity, and integrity into the system, from early childhood care and education through higher education (MHRD, 2020). UGC has made it mandatory for all universities to follow the system of Choice Based Course (CBC) and Outcome Based Education (OBE). Designing a Course is part of the science of teaching and learning. Precisely drawn outcomes of a Course provide clarity of purpose in teaching/learning. They act as a running thread of quality control across the planning of curriculum, selection of instructional strategies, choice of learning experience, and preparation of tests. Informing learners about the outcome well in advance, OBE enables ongoing concurrent self-assessment of learners for making sure of their progress towards attaining the outcome. Such outcomes of the Academic Programmes need to be scientifically structured with insights of continuity, sequence, and integration, appropriate for effective learning (N.J. Rao, 2020). William Spady stated that 'OBE means focusing and organizing an institute's entire programmes and instructional efforts

around the clearly defined outcomes we want all students to demonstrate when they leave the institute' (Spady, 1994).



In Outcome Based Education, you are systematically bringing your culminating outcomes directly down intact into a learning experience and addressing them comprehensively there through your curriculum, your instructional priorities and processes, your assessment and reporting system, and your motivations and expectations openly, visibly, and clearly focused on and aligned with your "ultimate" outcomes (Spady & Schwahn, 2010).

KSHEC Organisation

The Kerala State Higher Education Council has a three-tier structure consisting of an Advisory Body, a Governing Body and an Executive Body. The bodies of the Council are constituted by the Government for a four-year term. The KSHEC is the principal higher education policy input provider and trendsetter of the State of Kerala and it strives to bring about equity and excellence in higher education sector. The Council is an apex level statutory body, instituted under the Kerala State Higher Education Council Act, 2007, and the Kerala State Higher Education Council (Amendment) Act 2018 of the State Legislature of Kerala. Perceiving its democratic structure and participatory approach in making decisions, the Council is often denominated as a mandated, working collective of all the stakeholders of the higher education sector, including academics, administrators and students. The Council undertakes various faculty enrichment programmes through a variety of schemes addressing the pedagogical, subject specific, induction and in service quality enhancement etc. It academic division consists of four centres namely,

(1) Research on Policies in Higher Education

(2) Curriculum Development Centre

(3) Centre for Capacity Building in respect of faculty and educational administrators

(4) State Council for Assessment of Higher Education Institutions

(5) Faculty Development Centre.

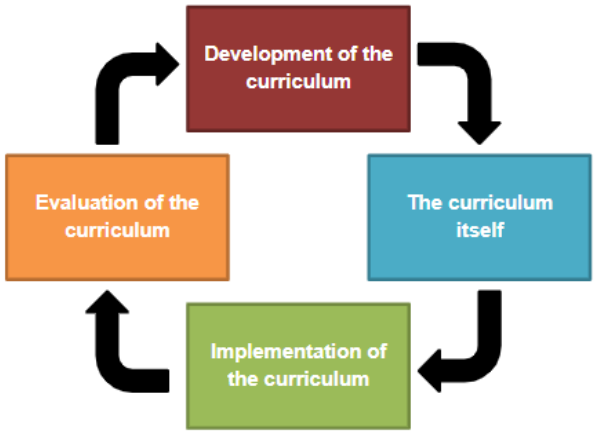
Concept Note

UGC has made it mandatory for all universities to follow the system of Choice Based Course (CBC) and Outcome Based Education (OBE). In Kerala, Universities have made all programmes to run in CBCS since 2014. Our UG/PG courses with fairly well updated contents have been under Credit and Semester System (CSS). Although their overall standard is quite good, their structure, composition, procedures and credit administration are not yet according to the CBS system, because they are not courses but annual papers divided into two for a semester. Courses are well designed instruction packages in specific knowledge fields, with preconceived results that go into the making of the outcome of the Academic Programme. They are scientifically structured with insights of continuity, sequence, and integration, appropriate for effective learning.

Designing a Course is part of the science of teaching and learning. Precisely drawn outcomes of a Course provide clarity of purpose in teaching/learning. They act as a running thread of quality control across the planning of curriculum, selection of instructional strategies, choice of learning experience, and preparation of tests. Informing learners about the outcome well in advance, OBE enables ongoing concurrent self-assessment of learners for making sure of their progress towards attaining the outcome. Since the outcomes are stated, the teachers also get to know the progress and they enjoy the legitimate right to test whether the learners have attained the goal.

Role of KSHEC

As part of the mandate, the KSHEC offers to provide scientific expertise through a three day residential workshop with the title "Redesigning of Courses for Outcome Based Education (OBE)" for the BoS in all our Universities for Redesigning the Courses of their UG Programme. The Council has organised workshops with the Board of Studies of various Universities in the State with the expertise of Prof. N.J.



Rao (CEDT, IISc, Bangalore) and his associates in redesigning Courses according to the norms of instructional science. The programme is designed and developed by Prof. Rao in which the training components includes the writing down the Outcome Statements of Programme, Programme Specific and Course levels. It also targets to make the faculty members aware of how these outcome statements are assessed and to methods of measuring the attainments of such educational outcomes.

The Council has been organising training on Outcome Based Education at the university level and on autonomous institutions level since 2018. The members of Board of Studies (BoS) exist in these institutions is the actual designers of curriculum in the respective disciplines. BoS of Undergraduate (UG) and Postgraduate (PG) programmes of the universities and autonomous institutions are selected as the stakeholder participants of hands-on-workshops, usually held for consecutive 3 days.

In one of the training events inaugurated, the then Higher Education Minister K.T. Jaleel lauded Outcome-based education saying that is has immense relevance to the higher education system in Kerala that largely lacks clarity of purpose, goals, and quality. He said, adding that the pedagogical approach is part of the State's policy for quality assurance in the sector.

These training programmes have been organised by KSHEC for 7 multidisciplinary Universities in the State under the title "Redesigning of Courses for Outcome Based Education (OBE)" primarily by Prof. N.J. Rao[1], and Dr. K. Rajani Kanth during the later part of 2018.

[1] *Former Chairman of CEDT (Centre for Electronics Design and Technology, IISc during 1981 – 1996, and Chairman, Department of Management Studies during 1998 – 2006, and superannuated as Professor at CEDT in July 2006. He is presently a Consulting Professor*

Prof. N.J. Rao

njraoiisc@gmail.com

PROFILE SUMMARY

N.J. Rao was the Chairman of CEDT (Centre for Electronics Design and Technology, IISc during 1981 – 1996, and Chairman, Department of Management Studies during 1998 – 2006, and superannuated as Professor at CEDT in July 2006.

He is presently a Consulting Professor at International Institute of Information Technology (IIIT), Bangalore, a member of several committees associated with NBA, and a member of the Core Committee that defined the new Accreditation processes of NAAC. His research areas included Control Systems and System Dynamics. His present research interests include higher education, pedagogy and education technologies.

He is presently working with Department of Higher Education, Kerala for improving quality of learning in Higher Education Degree Colleges, and several engineering colleges for curriculum design, pedagogy and quality of learning. He has designed and has been conducting a wide range of faculty development programs on NBA Accreditation, Curriculum Design, Course Design, OBE, and Assessment.

The original contents of the workshop have been developed by **Prof. N.J. Rao** who led the workshop at University level

at International Institute of Information Technology (IIIT), Bangalore, a member of several committees associated with NBA, and a member of the Core Committee that defined the new Accreditation processes of NAAC. His research areas included Control Systems and System Dynamics. His present research interests include higher education, pedagogy and education technologies. He has designed and has been conducting a wide range of faculty development programs on NBA Accreditation, Curriculum Design, Course Design, OBE, and Assessment.

Dr. K Rajani Kanth

Former Advisor, Principal, Professor in Information Science & Engineering - M S Ramaiah Institute of Technology (MSRIT),Bangalore
rajanikanth.kundurthi@gmail.com

PROFILE SUMMARY

Academic Qualifications:
B E (Electrical): Govt College of Engineering, Ananthapur,
Sri Venkateswara University
M.E & Ph.D: School of Automation, Indian Institute of Science, Bangalore

Academic Experience (Reverse Chronological Order):

- Advisor (Academics & Research), MSRIT, Bangalore
- Principal, MSRIT, Bangalore
- Vice Principal, MSRIT, Bangalore
- Professor & Head, MSRIT, Bangalore
- Professor & Head, Kakatiya Institute of Technology and Science, Warangal
- Senior Scientific Officer, Center for Electronics Design and Technology, IISc, Bangalore
- Scientific Officer, Center for Microprocessor Applications, IISc, Bangalore

Industrial Experience:

- Chairman and Technical Director, Electro Systems Associates Pvt Ltd, Bangalore.

Services to the Visvesvaraya Technological University, Belagavi:

- Former Member: Academic Senate, Staff Recruitment Committee, VIAT Implementation Committee, Faculty Advisory Committee, Finance Committee, Investment Sub-Committee.
- Former Chairman: Board of Studies in Computer Science / Information Science/ MCA, Research Review Committee in Computer Science etc.
- Continuing to serve VTU in various committees.

R&D:

- As Technical Director of ESA, designed and developed a variety of Microprocessor / Microcontroller Based Products which are presently being used widely in the country; developed several Custom-Designed systems for ADA, BPL. IPA etc; and developed several developmental tools for industrial applications.
- OTechnical Consultant for MSRIT project on Life Cycle Cost Estimation for Defense Equipment for DRDO.
- Publications in Several International / National Conferences & Journals

CHAPTER II

HANDS-ON-WORKSHOPS

As the UGC has made it mandatory for us to follow the system of Choice Based Course (CBC) and Outcome Based Education (OBE), our UG courses with fairly well updated contents have been under choice based credit and semester system. Although their overall standard is quite good, their structure, composition, procedures and credit administration are not yet according to the CBS system, because they are not courses but annual papers divided into two for a semester. Courses are well designed instruction packages in specific knowledge fields, with preconceived results that go into the making of the outcome of the Academic Programme. They are scientifically structured with insights of continuity, sequence, and integration, appropriate for effective learning.

Designing a Course is part of the science of teaching and learning. It is integral to OBE that insists upon determination of learning outcome as the first step. Precisely drawn outcomes of a Course provide clarity of purpose in teaching/learning. They act as a running thread of quality control across the planning of curriculum, selection of instructional strategies, choice of learning experience, and preparation of tests. Informing learners about the outcome well in advance, OBE enables ongoing concurrent self-assessment of learners for making sure of their progress towards attaining the outcome. It provides them with chances to demand new learning experiences that ensure the same. Since the outcomes are stated, the teachers also get to know the progress and they enjoy the legitimate right to test whether the learners have attained the goal.

KSHEC offers to provide scientific expertise through a three day residential workshop with the title “Redesigning of Courses for Outcome Based Education (OBE)" for the BoS in all our Universities for redesigning the Courses of their UG Programme.

KSHEC invited the expertise of the team led by Prof. N. J Rao for its series of training programmes on OBE particularly with the aim of equipping the Board of Studies members of Universities in the State. The first phase was focused on multidisciplinary and affiliating Universities. The phased manner of these trainings has aimed to result for providing a comprehensive idea of how OBE can be learnt and implemented in its curriculum transaction process. The typical nature of training sessions is shown in the figure.

Workshop Outcomes

WO1. Understand what Outcome Based Education is and choose Program Outcomes

WO2. Understand the Anderson-Bloom taxonomy of learning

WO3. Write Program Specific Outcomes (PSOs) for a general higher education program

WO4. Write Course Outcomes (COs) for a general course to meet the selected subset of Program Outcomes and Program Specific Outcomes.

WO5. Compute the attainment of COs, PSOs and POs

Resource Persons: Prof. N.J. Rao and Prof. K. Rajanikanth

Schedule of Workshop

Day I

09.30-10.00: Inauguration
10.00-13.00: OBE, Accreditation and Program Outcomes
14:00-15.00: Writing PSOs
15.00-17.00: Taxonomy of Learning

Day II

09.30-10.30: Taxonomy of Learning (Contd.)
10.30-11.30: Course Outcomes
11.30-13.00: Writing Course Outcomes
14.00-17.00: Writing Course Outcomes

Day III

09.30-11.00: Tagging Course Outcomes
11.00-13.00: Attainment of COs, PSOs and POs
14.00-16.00: Attainment of COs, PSOs and POs
16.00: Feedback and Discussions

Phase I: Workshops

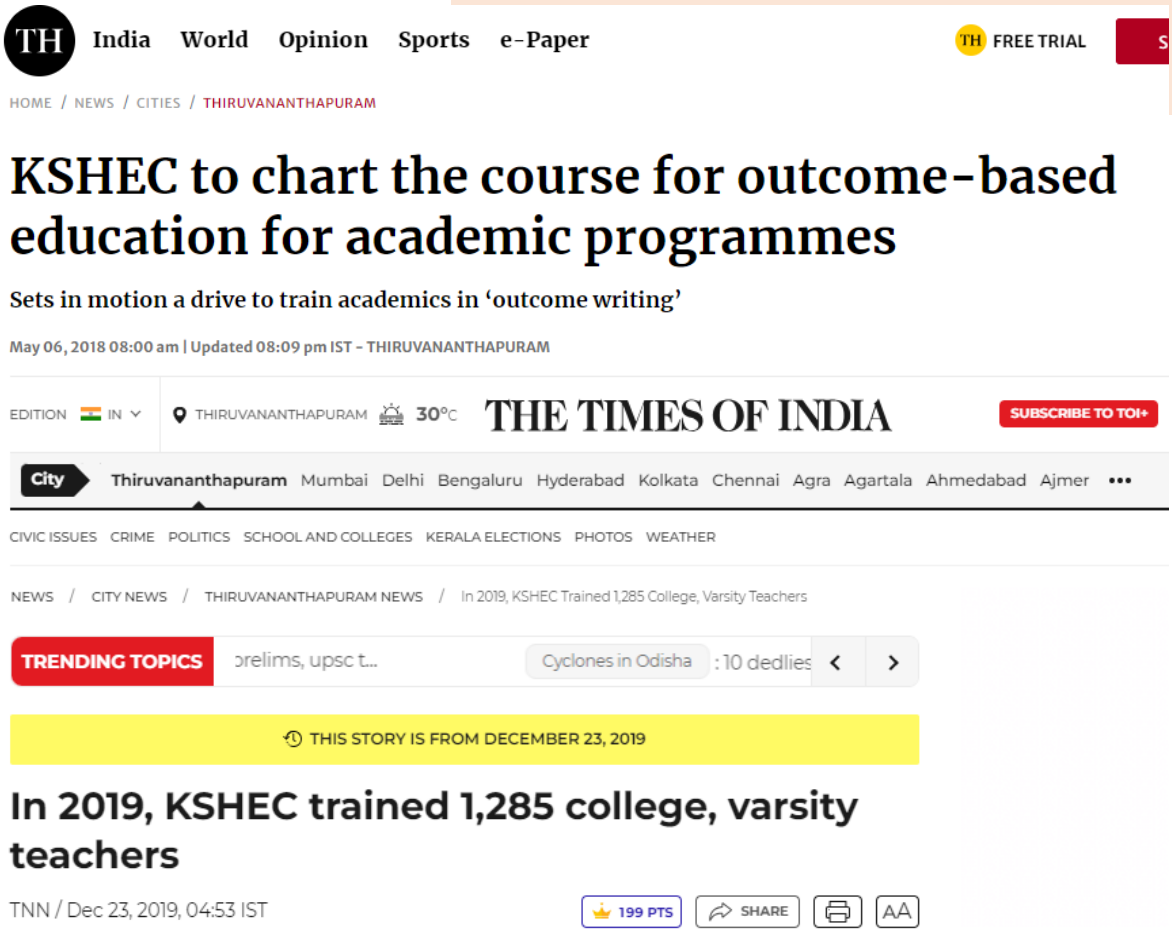
The first phase of workshops under the guidance of Prof. N.J. Rao was commenced for the BoS members of Universities in December 2017 (see Table I). There are eight such workshops

were held as part of the University level training programme primarily led by Prof. N. J. Rao and team of experts. These workshops were mainly designed for making the Board of Studies members more familiar with the OBE framework and three tier Outcome model. This has been done in residential mode workshop extends for three days duration and held at respective University campuses across the State.

Until 2017, the term OBE is hardly visible in the curricular or policy documents of Universities in the State. This was the time when the Council headed by the Vice Chairman Prof. Rajan Gurukkal, has initiated the idea of offering training programmes in the Universities through the eminent & experienced team of Resource Persons available in the country. Despite the clamor for student learning outcomes often raised in most of the policy documents in higher education in the country, a systematic scheme of OBE is predominantly missing in the curriculum revision process done by most universities in the country.

Previously, only a couple of Universities had presented a few Graduate Attribute statements on their webpages. Syllabus of most of the programmes were in the form of Modules/Units, without having any clarity of the effort of learning or teaching required for it or even the credits and hours specifically required for a paper or corresponding units. Usually, the respective course pages and contents hardly reflect any idea about the cognitive level of learning/outcomes expected from the learner at the end of that learning unit connected to the specific subject components mentioned in a unit or a module. A majority of the teaching community were also not fully aware about OBE or the concept of integrating learning outcomes in their course contents.

Hence this has been identified by the Council as the priority activity and as the most appropriate time to provide effective training for the teaching fraternity of the HEIs in the State by focusing initially to the Board of Studies (BoS) members of the Universities. The Vice Chairman/Member Secretary has sent communications to all Universities for inviting their BoS members for active participation and for scheduling the training programme. The Council provided resource person and other financial support for running the training activity.



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KSHEC to chart the course for outcome-based education for academic programmes

Sets in motion a drive to train academics in 'outcome writing'

May 06, 2018 08:00 am | Updated 08:09 pm IST - THIRUVANANTHAPURAM

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In 2019, KSHEC trained 1,285 college, varsity teachers

TNN / Dec 23, 2019, 04:53 IST 199 PTS SHARE AA

CHAPTER III
UNIVERSITY LEVEL WORKSHOPS

The Kerala State Higher Education Vice Chairman Prof. Rajan Gurukkal has mooted the necessity of OBE and learning outcomes in the Curriculum through important communications to the Vice Chancellors of State Universities. The training which Prof. Rao usually offers Faculty Development Programs (FDP) on a wide variety of pedagogical issues related higher education including Curriculum Design in UGC-NAAC Framework, Outcome Based Education, Course Design, Instructional Design and Assessment for Good Learning. These programs are offered as packages and each package consists of:

- workshop that is predominantly activity oriented
- Pre-workshop support
- Post-workshop consolidation of materials generated during the workshop
- Workshop materials (background materials, presentation slides and exercises) made available on a MOODLE web site even beyond the workshop
- One-to-one interaction with all participants during workshop, and pre- and post-workshop periods
- Written materials for use during the workshop
- Exercises that use ICT tools

A MOODLE based portal has been created by the Resource Person namely,

URL: http://njrao.org which is used to upload all training materials, course and the prepared course outcomes on this webpage. All participants have been provided with login id and

password to access this page. Participants are grouped as subject wise teams while doing the hands-on-exercises.

A workshop handbook/material prepared by the RP is distributed to the participants in advance, so that hands-on-exercises can be effectively done during the course of workshop by referring this. Tis material comprises the descriptive process of OBE based Course redesigning, Blooms Taxonomy (revised), Context of Accreditation, UGC regulations on CBCS etc.

University level workshops were subsequently organised by the Council since December 2017 which has resulted in to a very positive attitude towards the implementation of OBE in University curriculum. BoS members have obtained hands-on-experience for redesigning the existing courses in to an OBE format based on the scheme designed by Prof. Rao. The advantage of this method is mainly that it starts with writing of outcome statements, instruction methods, assessment items and ends with the clear and simple method of attainment of outcomes. This provides a comprehensive but uncomplicated version of OBE with a pragmatic way of implementation. As a result a large number of teachers belonging to various subject domains have been exposed to the OBE framework in a shorter period of time.

TABLE I
PHASE I: UNIVERSITY LEVEL BOARD OF STUDIES (BoS) WORKSHOPS HELD

No	Title of Workshop	Participant Group	Duration
1	Redesigning of Courses for Outcome Based Education Resource Person: Prof. N.J.Rao and Dr. K. Rajanikanth, of IISc, Bangalore	Chairman+One member from BoS of Science and Applied Science Faculties in University of Kerala Venue: KSHEC, Board Room, Tvpm No. of Participants: 32	16-18 December 2017
2	Redesigning of Courses for Outcome Based Education Resource Person: Prof. N.J.Rao and Dr. K. Rajanikanth, of IISc, Bangalore	Chairman+One member from BoS of Science Faculties in Mahatma Gandhi University Venue: M.G.University, Kottayam No. of Participants: 32	17-19 January 2018
3	Redesigning of Courses for Outcome Based Education (Engineering discipline) Resource Person: Prof. N.J.Rao and Dr. K. Rajanikanth, of IISc, Bangalore	Curriculum Committee Members of KTU Venue: CUSAT Main Campus, Kalamassery No. of Participants: 36	14-16 February 2018
4	Redesigning of Courses for Outcome Based Education (Engineering discipline) Resource Person: Prof. N.J. Rao and Dr. K. Rajanikanth, of IISc, Bangalore	BoS members of CUSAT Venue: CUSAT Main Campus, Kalamassery No. of Participants: 30	14-16 February 2018
5	Redesigning of Courses for Outcome Based Education Resource Person: Prof. N.J. Rao and Dr. K. Rajanikanth, of IISc, Bangalore	PG - BoS members of SSUS, Kalady Venue: SSUS, Kalady Campus No. of Participants: 36	12-14 November 2018
6	Redesigning of Courses for Outcome Based Education Resource Person: Prof. N.J.Rao and Dr. K. Rajanikanth, of IISc, Bangalore	UG - BoS members of Kannur University Venue: Thavakkara Campus, Kannur No. of Participants: 48	29-31-January 2019
7	Redesigning of Courses for Outcome Based Education Resource Person: Prof. N.J.Rao and Dr. K. Rajanikanth, of IISc, Bangalore	UG - BoS members of Calicut University Venue: Thenhipalam Campus, Calicut No. of Participants: 47	12-14 February 2019

No	Title of Workshop	Participant Group	Duration
8	Redesigning of Courses for Outcome Based Education Resource Person: Dr. Manulal P. Ram and Dr. V. Shefeeque, Research Officers, KSHEC	BoS members of Tunchath Ezhuthachan Malayalam University (TEMU), Tirur Venue: University Campus, Tirur No. of Participants: 30	10-11 November 2020

Coordinator: Dr. Manulal P. Ram, Research Officer

WORKSHOP I: University of Kerala

Redesigning of Courses for Outcome Based Education(OBE)
At KSHEC, Thiruvananthapuram, 14th to 16th December 2017
Participants: Board of Studies Members

The first 3 day duration Hands-On-Workshop on Outcome Based Education at University level was inaugurated on 14-12-2017. An initiative of the Council which emphasises the need of imparting quality Learning Outcomes in the teaching/Learning process of our HE Institutions. Mainly aimed to equip the BoS members of all universities, the participants are Chairman & two BoS members from every disciplines. Participants were the Board of Studies in Faculty of Sciences and Faculty of Applied Sciences & Technology of the University of Kerala .

The programme was inaugurated by Prof. Rajan Gurukkal, Vice Chairman of the Higher Education Council after the welcome note by Dr. Rajan Varughese, Member Secretary.

37 participants representing various BoS have attended the training programme. Participants are required to bring laptops with them.

General recommendation from the BoS members include the preliminary idea to be shared before the beginning of the training that:

- participants to bring the required documents in advance, like syllabus,
- present aim and objective of the courses and programme, question paper.
- participants to browse for bloom taxonomy and familiarize with it.

Prof. N.J. Rao was the Chairman of CEDT (Centre for Electronics Design and Technology, IISc during 1981 – 1996, and Chairman, Department of Management Studies during 1998 – 2006, and superannuated as Professor at CEDT in July 2006.

He is presently a Consulting Professor at International Institute of Information Technology (IIIT), Bangalore, a member of several committees associated with NBA, and a member of the Core Committee that defined the new Accreditation processes of NAAC. His research areas included Control Systems and System Dynamics. His present research interests include higher education, pedagogy and education technologies.

Dr. K. Rajinikanth, is Former Advisor, Principal, Professor in Information Science & Engineering - M S Ramaiah Institute of Technology (MSRIT), Bangalore

M.E & Ph.D.: School of Automation, Indian Institute of Science, Bangalore

- Centre for Electronics Design and Technology, IISc, Bangalore
- Scientific Officer, Centre for Microprocessor Applications, IISc, Bangalore

Sessions:

Thursday, 14-12-17

09.30-10.00: Inauguration

10.00-13.00: Outcomes, CBCS of UGC and Program Outcomes

14:00-17.00: Taxonomy of Learning

Friday, 15-12-17

09.30-13.00: Writing outcomes of a Course

14.00-15.15: Writing outcomes of a Course

15.30-17.00: Tagging COs with Cognitive Levels, Knowledge Categories and the number of Sessions

Saturday, 16-12-17

09.30-11.15: Writing Program Specific Outcomes (PSOs)

11.30-13.00: Identifying POs and PSOs that get addressed by Course Outcomes

14.00-16.00: Assessment and CO Attainment

16.00: Feedback, Discussions & Valedictory Session

WORKSHOP II: MG University Kottayam

Redesigning of Courses for Outcome Based Education(OBE)
At MG University, 17th to 19th January 2018
Participants: Board of Studies Members

Subsequent to the first workshop held at KSHEC for the Board of Studies in Faculty of Sciences and Faculty of Applied Sciences & Technology of the University of Kerala on 14th December 2017 for 3 days which was instructed by Prof. N.J. Rao (CEDT, IISc, Bangalore) and his associate Dr. K. Rajanikanth as experts. In continuation of it, KSHEC has organised similar workshop for BoS Chairman + one member of Faculty of Sciences of Mahatma Gandhi University, Kottayam from 17th to 19th January 2018.

Duration of workshop	17th-19th January, 2018 (3 days)
Number of Candidates Attended	27

Prof. N.J. Rao offers faculty development programs on a wide variety of pedagogical issues related higher education including Curriculum Design in UGC-NAAC Framework, Outcome Based Education, Course Design, Instructional Design and Assessment for Good Learning. It consists of:

- Program is offered as a workshop that is predominantly activity oriented
- Pre-workshop support

● Post-workshop consolidation of materials generated during the workshop ● Workshop materials (background materials, presentation slides and exercises) made available on a MOODLE website even beyond the workshop

● One-to-one interaction with all participants during workshop, and pre- and post-workshop periods

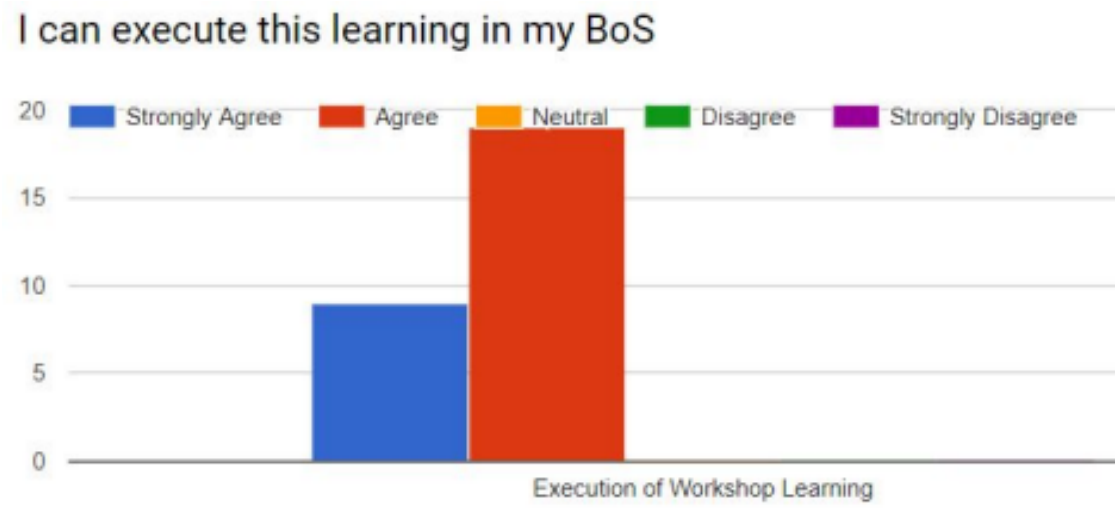
● Written materials for use during the workshop

● Exercises that use ICT tools

Among 15 faculties, 28 participants including Chairman and one member of each BoS have actively participated. The programme was held in the seminar Hall of Nanoscience division of Physics Department. The workshop was inaugurated by Prof. Sabu Thomas, the Pro.VC of the University.

Outcome of the workshop

During the workshop, participants have been exposed to outcome writing and its techniques. Including the Blooms Taxonomy OBE, NAAC, UGC Guidelines, CBSS etc. At the end of the workshop, feedback from the participants shows that the entire programme was very informative and provided knowledge on the relevance of outcome based education and its structure. Feedback were collected through google form.



A course in a General Higher Education program in India needs to be designed and conducted to facilitate the students to meet the identified Course Outcomes. The Course Outcomes

address a subset of Program Outcomes identified by the University or the Autonomous Institute that offers the Program. Also, the Course Outcomes address Program Specific Outcomes identified by the Branch/Department. The three-day workshop aims at facilitating the participants to write Course Outcomes of courses of their choice and Program Specific Outcomes in CBCS of UGC and NAAC Accreditation frameworks.

Workshop Outcomes

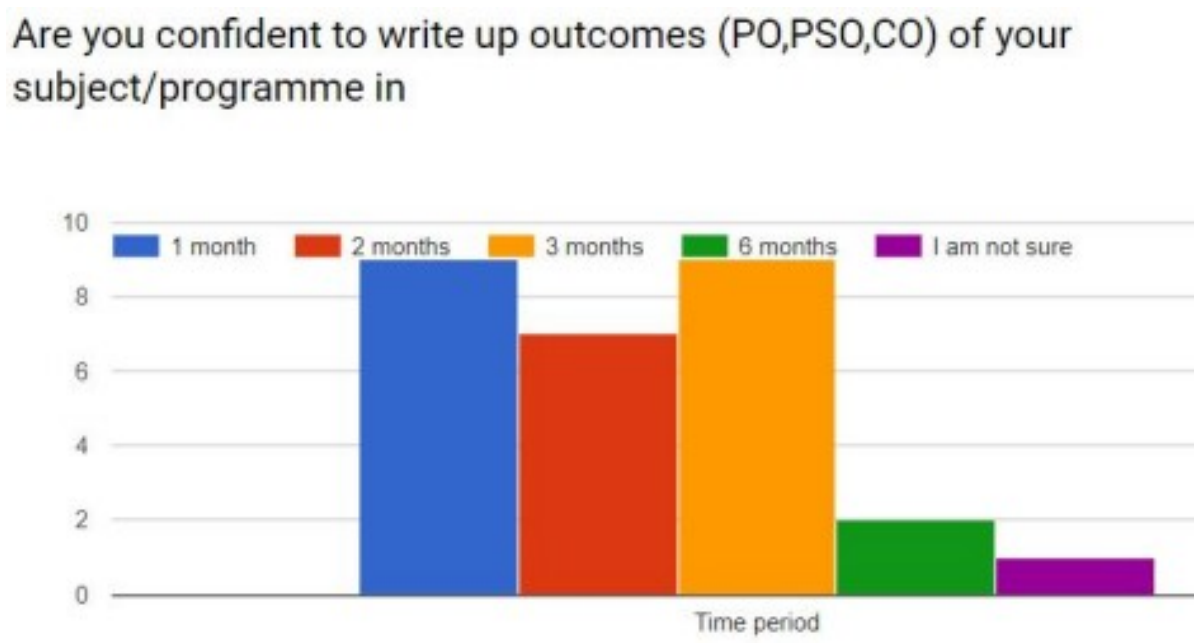
WO1. Understand OBE and CBCS of UGC, and choose Program Outcomes

WO2. Understand the Anderson-Bloom taxonomy of learning

WO3. Write Program Specific Outcomes (PSOs) for a general higher education program

WO4. Write course outcomes for a general course to meet the selected subset of Program Outcomes and Program Specific Outcomes.

Resource Persons: Prof. N.J. Rao and Prof. K. Rajanikanth
Course Coordinator: Dr. Manulal P. Ram, Research Officer KSHEC



FEEDBACK SUMMARY

Q. Given the topic, was this workshop

Too Short	Right Length	Too Long
2	25	1

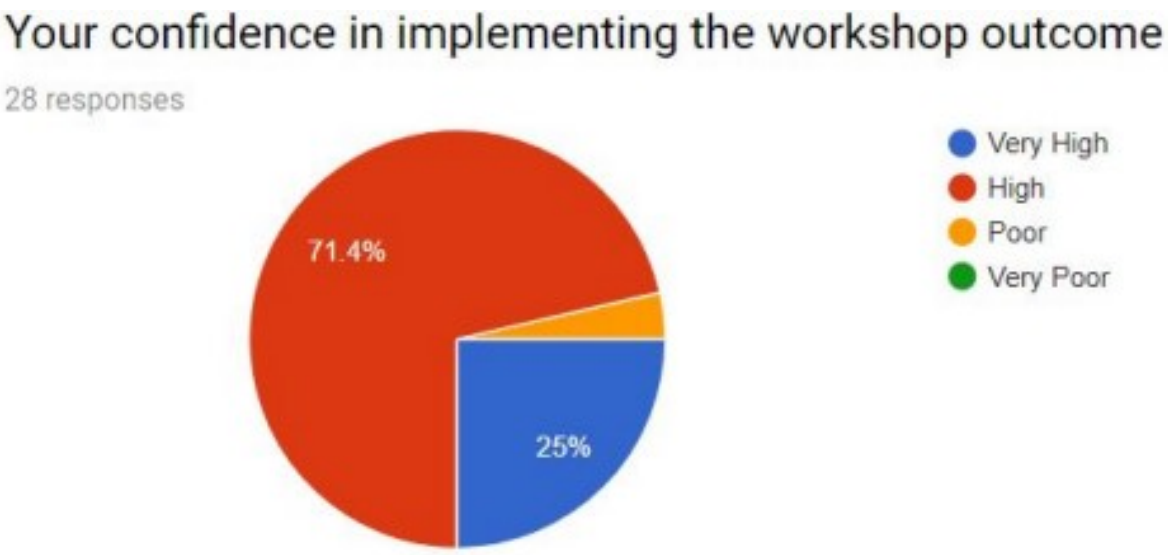
Q. Your confidence in implementing the workshop outcomes

Very High	High	Poor	Very Poor
7	20	1	0

Q. Overall Rating:

Hands-on Practice	4.3/5
Study Material (online + offline)	4.3/5
Applicability in your Subject	4.33/5

Perception of workshop content	4.3/5
Program Facilities in general	4.63/5
How do you rate this workshop with the last 5 workshops (including this) you attended in your service in terms of its application level	2.65/5



Q.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The workshop content was well informed in advance [Workshop Content]	8	16	3	0	1
I can execute this learning in my BoS [Execution of Workshop Learning]	9	19	0	0	0

The program was well paced within the allotted time	11	15	2	0	0
Method presented here can be easily practiced in my BoS	6	20	2	0	0
Improved understanding on CBCS	12	16	0	0	0

Improved my understanding of OBE [Understanding of OBE]	12	16	0	0	0
Improved my understanding of BLOOM Taxonomy [BLOOM Taxonomy]	8	17	2	0	1

Q. Are you confident to write outcomes (POs, PSOs, COs) of your subject/program in a Time period of

1 month	2 months	3 months	6 months	I am not sure
9	7	9	2	1

Q. How much you are confident to be a master trainer in this subject

Very Confident	Confident	Neutral	Not so confident	Not Confident
3	10	8	5	2

Q. Possible hurdles expected if any, during the process of implementing this workshop practice for redesign your curriculum:

- Existing pattern of workload
- It should be continued in evaluation also
- The credits allotted in the present syllabus to be revised based on cognitive levels, Attitude of the teachers.
- It result to the increase in the working hours if have to do manually.
- The commitment and involvement of the teachers, positive approach from university academic bodies, National level policies, etc.
- Lack of participation of the faculty
- Acceptability of OBE by the stake holders, difficulty in putting questions and answers during the beginning, implementation without affecting workload
- A little more effort from our side is needed to remember all the terms fully and align it according to the rules
- Workload is a barrier, time is again a constraint, diverse nature of learners

- Difficulty may arise for getting acceptance from the university authorities and from teaching community
- Cooperation of faculties, time, and resources
- Finding the resource person for introducing OBE, the financial aspect of giving training to BoS members and other senior faculty members (at least one from each college)
- Implementing it within a limited time may be difficult
- The number of courses in the UG program is around 100. So it is very difficult to complete the work in time.
- Adaptability to the new system will take time
- Session duration can be reassigned so that hands on sessions get more time.
- This workshop should be organized in two phases. Two workshops of duration one or two days · More study materials and more exercises (2)
- More information about assessment required
- Include more hands on exercises and a short project
- Program specific hands on training
- Resource persons from Kerala higher education council to be made available, a set of trained people can work in a university to introduce OBE
- It should be given to all members of board of studies
- The program may be continued and may extend to all teaching community
- Awareness about the OBE concept is necessary. Institutions must be directed to conduct workshops based on OBE
- If a model syllabus with all expected modifications from the present one could have been provided so that understanding becomes easy. Also could have given a detailed class on OBE rather than going directly into the program
- University may formulate regulations regarding this type of activities
- The transaction may be started with introducing the limitations of the present syllabi of each program. It may be done with some documents available at preset in the University.
- Conduct this training before the syllabus revision
- We need to incorporate these modifications in our existing curriculum

WORKSHOP III: CUSAT and KTU

Workshop for Members of BOSs of Engineering Programs
Duration 14th - 17th February, 2018
Number of Candidates Attended: 28
Participants: Board of Studies Members

A course in a General Higher Education program in India needs to be designed and conducted to facilitate the students to meet the identified Course Outcomes. The Course Outcomes address a subset of Program Outcomes identified by the University or the Autonomous Institute that offers the Program. Also, the Course Outcomes address Program Specific Outcomes identified by the Branch/Department. The three-day workshop aims at facilitating the participants to write Course Outcomes of courses of their choice and Program Specific Outcomes in CBCS of UGC and NAAC Accreditation frameworks.

Outcomes/Objectives can be defined at three levels in the case of undergraduate programs in engineering. Program Educational Objectives: PEOs (Program Educational Objectives) are broad statements that describe the career and professional accomplishments in four to five years after graduation that the program is preparing graduates to achieve.

Program Outcomes and Program Specific Outcomes: Program Outcomes (POs) are statements that describe what the students graduating from undergraduate engineering programs should be able to do. Program Specific Outcomes (PSOs) are statements that describe what the graduates of a specific program should be able to do.

Course Outcomes: COs (Course Outcomes) are statements that describe what students should be able to do at the end of a course.

Workshop Outcomes

1. Understand OBE and CBCS of UGC, and choose Program Outcomes
2. Understand the Anderson-Bloom taxonomy of learning
3. Write Program Specific Outcomes (PSOs) for a general higher education program
4. Write course outcomes for a general course to meet the selected subset of Program Outcomes and Program Specific Outcomes.

Resource Persons: Prof. N.J. Rao and Prof. K. Rajanikanth

Feedback at the end of 3-day Workshop

1. Given the topic was this workshop

Too Short	Right Length	Too Long
1	17	1

2. Your confidence in implementing the workshop outcomes

Very High	High	Poor	Very Poor
5	12	2	0

3. Overall Rating:

Hands-on Practice	4.6/5
Study Material (online + offline)	4.5/5
Applicability in your Subject	4.5/5
Perception of workshop content	4.5/5
Program Facilities in general	4.6/5
How do you rate this workshop with the last 5 workshops (including this) you attended in your service in terms of its application level	2.7

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The workshop content was well informed in advance [Workshop Content]	11	4	3	1	0
I can execute this learning in my BoS [Execution of Workshop Learning]	8	9	2	0	0
The program was well paced within the allotted time	10	6	2	1	0
Method presented here can be easily practiced in my BoS	6	12	1	0	0
Improved understanding on CBCS	6	12	0	1	0
Improved my understanding of OBE [Understanding of OBE]	14	5	0	0	0
Improved my understanding of BLOOM Taxonomy [BLOOM Taxonomy]	11	8	0	0	0

Are you confident to write outcomes (PSOs, COs) of your subject/program in a Time period of

1 month	2 months	3 months	6 months	I am not sure
9	5	1	1	3

How much you are confident to be a master trainer in this subject

Very Confident	Confident	Neutral	Not so confident	Not Confident
5	9	9	2	0

Possible hurdles expected if any, during the process of implementing this workshop practice for redesign your curriculum:

- Most of the faculty members and authorities are unaware of the OBE principles and practices. Convincing peers will be the major hurdle.
- Inter disciplinary discussions are more needed. Reaching to a harmonious PSO will be a task.
- The implementation of these practices will be possible only by convincing all the Professors in an institution with expert lectures like this by eminent professors
- Absence of autonomy for HE institutions
- Making colleagues feel the error in the already set CO will be difficult.
- Lack of Coordination
- Lack of autonomous status places all sorts of hurdles in this implementation
- Opposition from faculty members. Lack of time due to full swing class room sessions
- Faculty members may perceive this as too much of documentation
- Exhaustive process , Reluctance from already overloaded faculty
- People are usually reluctant to change their practices even though the new system is very systematic and for the betterment of the society as a whole.

Please give suggestions of improvement:

- All those who are part of the curriculum revision process should attend such workshops.
- More emphasis on exercises to be given
- Some errors and incomplete workshop material even though online material are made available.
- Include technical assistants who are familiar with OBE practices along with the resource persons

- Faculty members may be given a chance to create the complete document of their course and verification from Professor, on Sir's own time.
- Some information may be presented as tables
- You may include discussions on Vision, Mission & PEOs
- Setting the target of CO attainment
- The content could be covered in 2 days
- Make it a 4 day workshop
- The difficulty in getting the faculty members together relieved from their duties
- Information should be available after starting the exercise of implementing
- Form small groups for discussion
- Allow each college to survive on their own by cutting their links to any Central University (KTU). Unless the chicks are not kicked off by the mother, they will not even try / learn to survive. At least those colleges which are more than 10 or 15 years of age should be kicked off and compelled for self survival.

WORKSHOP IV: Sree Sankaracharya University of Sanskrit (SSUS), Kalady

Workshop for Members of BOSs of Engineering Programs
Duration 14th - 17th February, 2018
Number of Participants Attended: 43
Participants: Board of Studies Members

In continuation to the series of workshops held on Outcome Based Education (OBE) for Board of Studies Members of PG courses of various universities of the state during the past, a similar ind of workshop has been conducted from 12th to 14th November 2018 at Sree Sankaracharya University of Sanskrit (SSUS) at Kalady, in pursuit of publishing outcomes of the PG programmes of every university.

The same was successfully completed with resource persons Prof. N.J. Rao, (Rtd) Chairman, Department of Management Studies, Indian Institute of Sciences, Bangalore, and his associate Dr. K. Rajani Kanth, Former Advisor, Principal, Professor in Information Science & Engineering - M S Ramaiah Institute of Technology (MSRIT), Bangalore.

In total 43 faculty members from 25 Board of Studies of the university have participated in the workshop during the said period. The workshop was inaugurated by the Vice Chancellor and the overall feedback of the workshop tells that the same has been a valuable experience for the participants as they have got ample exposure to the writing skill of outcome of the courses they teach.

Coordinator at SSUS, Kalady: Dr. Saju, Department of Geography

WORKSHOP VI: University of Calicut,

Workshop for Members of BOSs of UG Programmes
Duration 12 to 14 February, 2019
Number of Participants: 54
Participants: Board of Studies Members

The Regulations of Choice Based Credit Semester System for UG curriculum was implemented from 2009 admission onwards, under University of Calicut, as per the directions of Governing Council of the Kerala State Higher Education Council. The modified Regulations of Choice Based Credit Semester System for UG Curriculum was implemented from 2014 admission onwards, under the University, as per the recommendations of Hridayakumari Committee appointed by the Govt. of Kerala.

OBE Workshop at University of Calicut-Participants

There is no scheme of OBE has been adopted in the University during the time of the workshop held in February 2019. Three day workshop was very positively welcomed by the academic community of the University. A larger involvement of the UG BoS members was visible. Pro. V/C has consistently attended the training sessions in which wide discussions were also held.

Coordinator at University of Calicut: Dr. Nishanth A., Syndicate Member (Payyannur College)

WORKSHOP V: Kannur University,

Workshop for Members of BOSs of UG Programmes
Duration 29th to 31st January, 2019
Participants: Board of Studies Members
Number of Participants: 48

A three-day workshop of Outcome Based Education for the Board of Studies Members of Undergraduate Programmes of Kannur University was held from 29th to 31st January at Academic Staff College Building in Thavakkara Campus. The workshop was attended by 48 members belonging to 34 disciplines. Prof. N.J.Rao and Dr. Rajanikanth have leaded the classes. The workshop has become a a major leverage for the university as the curriculum revision of UG programmes is anvil by the month of February 2019.

Coordinator at Kannur University: Dr. Nishanth A., Syndicate Member (Payyannur College)

FEEDBACK FROM PARTICIPANTS

Good teachers want good learning to occur as a result of their teaching. Good learning means, besides recalling information, acquiring the ability of problem solving, and critical and creative thinking. Students learn well when

- they are provided information about the course outcomes (what the students should be able to do at the end of the course), their responsibilities, and the criteria used to evaluate their performance
- the assessment is in alignment with the stated outcomes
- instructional activities are designed and conducted to facilitate them to acquire the stated outcomes and they are actively engaged and challenged at the right level

A course in a General Higher Education program in India needs to be designed and conducted to facilitate the students to meet the identified Course Outcomes. The Course Outcomes address a subset of Program Outcomes identified by the University or the Autonomous Institute that offers the Program. Also, the Course Outcomes address Program Specific Outcomes identified by the Branch/Department. The three-day workshop aims at facilitating the participants to write Course Outcomes of courses of their choice and Program Specific Outcomes in OBE-CBCS of UGC and NAAC Accreditation frameworks.
The workshop will be dominantly activity oriented and will make use of some simple IT tools. The resources for the workshop will be made available on a MOODLE web site.

Workshop Outcomes

1. Understand what Outcome Based Education is and choose Program Outcomes
2. Understand the Anderson-Bloom taxonomy of learning
3. Write Program Specific Outcomes (PSOs) for a general higher education program
4. Write course outcomes for a general course to meet the selected subset of Program Outcomes and Program Specific Outcomes.

Resource Persons: Prof. N.J. Rao and Prof. K. Rajanikanth

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The workshop content was well informed in advance [Workshop Content]	21	22	8	2	2
I can execute this learning in my BoS [Execution of Workshop Learning]	9	41	4	0	1
The program was well paced within the allotted time	17	33	4	0	1
Method presented here can be easily practiced in my BoS	7	41	6	0	1
Improved understanding on CBCS	8	41	5	0	1
Improved my understanding of OBE [Understanding of OBE]	17	35	2	0	1
Improved my understanding of BLOOM Taxonomy [BLOOM Taxonomy]	15	35	4	0	1

How much you are confident to be a master trainer in this subject

Not Confident	3
2	25
3	21
4	4
Very Confident	2

Are you confident to write up outcomes (PO, PSO, CO) of your subject/program in [Time period]

1 month	24
2 months	20
3 months	6
6 months	3
I am not sure	2

Overall Rating:

Hands-on Practice	4.18

Study Material (online + offline)	4.61
Applicability in your Subject	4.03
Perceptibility of workshop content	4.25
Programme Facilities in general	4
How do you rate this workshop with the last 5 workshops (including this) you attended in your service in terms of its application level	2.85

Given the topic, was this workshop

Too Short	0
Right Length	49
Too Long	6

Your confidence in implementing the workshop outcome

Very High	7
High	45
Poor	2
Very Poor	1

Possible hurdles expected if any, during the process of implementing this workshop practice for redesign your curriculum

- All faculties to be trained before implementing.
- Conveying the ideas completely to teachers may be bit difficult
- Credit and teaching hours
- Degree Equivalency issue
- Difficulty in tally with credits and work loaded
- Existing pattern may require a drastic change
- Feel difficulty in tallying credit with work load
- Incompetent management
- It is not fully supporting language subjects like Malayalam
- Lack of adequate infrastructural facilities
- Lack of awareness about the modern trends in pedagogy among the teaching community
- Lack of flexibility in the curriculum
- My subject offers courses with literary content, media, language skills, theory and criticism, translation, ELT and Film Studies. I am at a loss as to how I would be able to present them under a few PSO's.
- Need more time
- Duration
- No flexibility in curriculum
- Number of courses to be included to the program
- Outcome attainment and incorporation may be
- Problems may take place in assessment.
- Proper material needed
- Reaching consensus regarding PSO, CO
- Redesign Credit
- Redundant University regulations
- Regarding credit and total hours

- The practicability of the redesigning is not met with
- This is a double main subject sharing with Urdu and Arabic may create some problems
- Time constraint. Need time to incorporate all the aspects of OBE in the curriculum and syllabus redesigning.
- Time Constraints. Need sufficient time to incorporate the aspects of OBE in the curriculum
- University framework: No advance discussions with teachers. Affects on existing system.
- Workload and Credit Distribution

Suggestions of improvement

- All teachers should attend OBE Workshop (5)
- Better to give Subject wise (Science, Humanities, Languages) training. (8)
- Conduct more workshops
- Conduct workshops at the initial stages of curriculum and syllabus restructuring
- Development of a common model yet to
- Encourage the university authorities to focus more on academic matters
- Have to streamline and reduce number of courses in a program
- It was fine
- Number of a batch may be kept minimum
- Other board members to attend this work shop
- Precise blue print of the core idea should be given with more clarity
- Precise blue print of the core idea will be helpful
- Prepare models keeping all the programs in mind.
- Provide in advance a model COs, PSOs, etc. for all subjects.
- Subject wise flexibility should be introduced
- Syllabus to be prepared by the respective faculty members following the guidelines provided in the workshop. There should not be any dilution while implementing it.
- Teachers should be made aware about this aspect by giving workshop for all the teachers.
- The real mechanism of designing curriculum at the university is also to be considered.
- This is fine.

Feedback to Resource Persons

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The content of the course is relevant to the stated workshop outcomes	19	16	1	0	0
The sequence of the topics is appropriate	13	23	0	0	0
Course material were complete and consistent with respect to all essential issues	13	22	1	0	0
The time allocated to different topics was appropriate	7	25	3	0	0
Resources provided during the workshop were adequate	13	20	2	1	0
Resource persons were competent in conducting this workshop	27	9	0	0	0

Overall the workshop was effective and useful	15	19	2	0	0

What are your suggestions for improving the program?

- A brief of the courses may be mailed to the participants beforehand
- Activities could have been included with group discussions to correlate the PSO's of related disciplines
- Better to give Subject wise (Science, Humanities, Languages) training.
- Conduct classes separately for science & humanities
- Conduct workshop separately for Arts & science, Languages....
- Program wise workshop is needed.
- Please arrange the group on faculty base
- Separate sessions for art and science streams, explanations to be provided with more examples
- Separate programs for different discipline will be useful
- It is better that such workshops may be conducted after getting norms and guidelines of the University
- More inclusive workshops
- More resource persons may be included
- Participant Number should limit to 25
- Physical facility for the conduct of the seminar should be improved
- Please try to separate workshops for science arts and languages and try to include all the members of board of studies.
- Program can be conducted in April/ May
- Provide a Structure for BCA and BSC Computer Science
- Provide model POs, COs etc in advance.
- Reduce it to two days.
- Prior intimation and providing reading material is necessary to come prepared.
- All faculty members are to be provided training.
- Provide PC or laptop during the training
- Venue should be appropriate to disseminate such program.
- May incorporate more hands-on session.
- The number lectures may be reduced, and practical oriented training would be better
- The workshop should have been conducted a couple of months back. A model pertaining to each program would have been more helpful.
- Training may be given to all the board members
- Very nice presentations by competent resource persons
- Consider all disciplines, this workshop mainly thrusted in science

WORKSHOP VIII: Thunchath Ezhuthachan Malayalam University (TEMU), Tirur

Two day Workshop (10-11 November 2020)
At TEMU Campus, Vakkad, Tirur
Participants: Board of Studies Members

This workshop was directly handled by the Research Officers Dr. Manulal P. Ram and Dr. Shefeeque V from the KSHEC. There are 23 PG programmes are offered by the University. MA Linguistics, Malayalam (Creative Writing), Malayalam(Literature Studies), Malayalam(Cultural Heritage Studies), Development Studies(Local Development), Mass Communication and Journalism, M.A Environmental Studies, M.Sc Environmental Studies, History, Film Studies, Sociology, Syllabus, LINGUISTICS, M.A.MALAYALAM(LITERATURE), M.A.MALAYALAM(CULTURAL HERITAGE), M.A.ENVIRONMENTAL STUDIES, MSc ENVIRONMENTAL STUDIES, M.A. Development Studies and Local Development, M.A. MALAYALAM (CREATIVE WRITING), M.A. SOCIOLOGY, M.A. HISTORY, M.A. JOURNALISM & MASS COMMUNICATION, M.A. FILM STUDIES, MA TRANSLATION STUDIES AND COMPARATIVE LITERATURE. Are the PG Programmes and have been represented by the BoS Members.

Coordinator at TEMU: Dr. Rajeev Mohan, Asst. Professor, Dept. of Media Studies

Subsequent to the first workshop, on 21st January 2021 an online evaluation of the COs prepared by the faculty has been made by the resource persons. This has enabled the faculty members to refine the COs in a more appropriate and effective manner. COs and PSOs of 24 programmes /courses have been prepared by during this workshop.

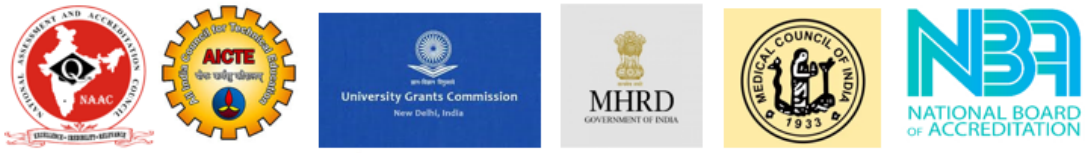
CHAPTER IV

Institution Level Workshops

Subsequent to this, the council has continued this activity as a follow up action by providing hands-on training to the faculty members of the institutions by the research officers of the council.

During the period of 2019-20, the KSHEC has conducted large number of such workshops at various institutions in the state, which has trained approximately +1200 teachers belonging to different board of studies especially autonomous institutions.

Workshop involves introducing the concept of OBE, fundamental guidelines of CBCS and accreditation and designing the courses through adopting outcome-based education and learning taxonomy[2] to the participants. This would provide exposure to the participants for writing the outcomes at Programme Specific and Course levels. Based on the experience they gain the individual board of studies can implement this method in redesigning the programme and modify their course contents adopting appropriate cognitive levels specified under revised blooms taxonomy. Most of the state universities and a number of autonomous institutions have already adopted this scheme in their revised curriculum. Since this activity takes a couple of years to stabilize as a full-fledged practice, institutions are in the process to revise their curriculum adopting this method during the course of a three-year period.



NAAC and UGC require that all higher education programs follow Outcome Based Education (OBE).

Universities and Autonomous Institutions will design the curricula of programs within the framework provided by UGC, NAAC and State HECs.

The further advantage of this concept is, that irrespective of whether the curriculum has been revised fully under outcome-based education, the teachers can adopt this method in classroom instructions and assessment methods they practice at the institution level. In the context of online learning strategies being essential to cater the education need of the institutions,

[2] *Revised Blooms Taxonomy (Anderson and Krathwohl, 2001)*

adopting this method in teaching and assessment is an inevitable component of future learning methods.

(1) Maharajas College (Autonomous) Ernakulam:

A two day workshop of Outcome Based Teaching and Evaluation for the Board of Studies Members of Undergraduate Programmes of Maharajas College was held from 11 th to 12 st March. This is the first of this kind offered directly by council by its own resource persons. The method adopted in this workshop was strictly that followed by Prof. N.J. Rao and his materials are used. Hands-on training was given to all participants during this workshop. Council takes assistance from other trained faculty members of universities and affiliated colleges in this workshop. PO, PSO & COs are prepared by the participants during the workshop.

(2) Sacred Heart (Autonomous) College, Thevara:

The 2 day workshop was organised by the council during 2-3 May 2019. Prof. Rajan Gurukkal and myself have provided necessary resources in which one external resource person has also be invited. 52 teachers belong to 23 disciplines of BoS have attended the workshop. PO, PSO & COs are prepared by the participants during the workshop.

(3) Fatima Mata National (Autonomous) College Kollam:

Conduct of 2 day workshop on OBE, the council has agreed to organize the same during 14-15 May 2019. Accordingly, Myself along with 2 other resource persons (Dr.Ajay and Mr.Vijayakrishnan, from Government College Kottayam and Government College, Chittur respectively) have lead the workshop at the college in which 54 teaching faculty belong to 18 BoS have participated. PO, PSO & COs are prepared by the participants during the workshop.

(4) Christ College (Autonomous) Irinjalakuda:

On the basis of their request, in which Prof. Rajan Gurukkal has delivered Key note address and lead the subsequent sessions of the workshop. Myself and Dr.Saju, Department of geography, SSUS Kalady provided necessary support as resource persons in the workshop. 52 faculty members belong to 21 BoS have participated the workshop. PO, PSO & COs are prepared by the participants during the workshop.

(5) St. Teresa's (Autonomous) College Ernakulam:

As part of awareness of Outcome Based Education programme presently provided to the autonomous colleges in the state, a one day inclusive training and discussion was held with other research officers of the council in order to engage them for the OBE training programmes as per the direction of the chairman. On 24-25 June, training was given to all teachers of St. Teresa's College Ernakulam. PO, PSO & COs are prepared by the participants during the workshop.

(6) St. Josephs (Autonomous) College, Irinjalakuda:

Workshop was held during 15th -16 th July 2019 and Resource Persons Dr.Shafeeque and Dr.Saji Mathew & Dr. Manulal P. Ram have attended. The programme received very positive response due to its of active exercise-oriented nature. PO, PSO & COs are prepared by the participants during the workshop.

(7) St. Thomas (Autonomous) College Thrissur:

During 26th -27th August 19, BoS members received 2 day training by Dr. Manulal P. Ram & Dr.Shafeeque which have been further taken by the IQAC of the College for complete revamping of their UG as well as PG Curriculum. They have conducted a series of hands-on-workshops for equipping their faculty which have been supported technically by these resource persons. PO, PSO & COs are prepared by the participants during the workshop.

(8) MES Mampad (Autonomous) College Mampad:

The 2 day workshop on OBE was held during 9th and 10th October in which 38 teachers have participated representing their BoS. Another workshop on OBE. Dr. Manulal P. Ram & Dr. Shafeeque have led the sessions. PO, PSO & COs are prepared by the participants during the workshop.

(9) Mar Ivanios (Autonomous) College Thiruvananthapuram:

The Kerala State Higher Education Council has organized 2 day workshop on Outcome Based Education (OBE) for the entire faculty members of at Mar Ivanios (Autonomous) College Thiruvananthapuram during 24th and 25th January 2019. Dr. Manulal P. Ram, Dr. Saji Mathew & Dr. Shafeeque have led the sessions. PO, PSO & COs are prepared by the participants during the workshop. Method of attainment computation has also been introduced in the sessions.

In addition to the autonomous colleges, KSHE has provided hands-on-training to several HE Institutions on OBE with duration ranging from 1 to 2 days. These institutions include Arts and

Science Colleges, and a variety of Professional Colleges in the State. In spite of the affiliating nature of such colleges, the training programmes were welcomed with high enthusiasm and most of these colleges have internalized the OBE concept in to their teaching-learning practices and assessment tools particularly to the Continuous Internal Evaluation (CIE) process. Good examples of PO, PSO and Course Outcome statements are produced by these institutions.

CHAPTER V

Hands-on-Mode of Workshop

Hands on Workshops are similar in mode to those provided by Prof. N.J. Rao with five exercises (Exercise 1 to 5) are given to the participants at various level. First exercise is to choose or pick the best/priority-based Programme Outcome (PO) from the ten provided POS. These POS are introduced as those presently available in the NAAC Manual as well as NBA manual.

The following general guidelines must be adopted during the picking up of appropriate POS for the entire programmes of an Institution.

In general, Outcomes are what the students are expected to be able to do at the end of a unit of learning. The unit of learning can be a two/three/four-year formal program, a semester long course of a program, or an instructional unit of few hours of a course.

An Outcome

- Should unambiguously state what the student should be able to do/perform
- What the students do or perform are observable and assessable
- Students should be able to understand what it means (comprehensible)
- Should be able to provide guidance to students in planning their learning

There are three levels of Outcomes

- Graduate Attributes/Program Outcomes (POs)
- Program Specific Outcomes (PSOs)
- Course Outcomes (COs)

Exercise I: Choosing the appropriate PO statements (Graduate Attributes)

This exercise is given to all participants irrespective of their disciplines. Graduate Attributes are expected to be common to all programmes and to be declared by the Institution in general. These are generic statements that all students are expected to achieve at the end of their respective programme. Program Outcomes (POs) indicate the generic knowledge, skills and attitudes that every student graduating from a UG program should attain. While every course of the program can address only a subset of POs, all the core courses together should be able to address all the POs.

The suggested set of POs for General Undergraduate Programs suggested by NAAC

Program Outcomes

PO1 Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO2 Problem Solving: Understand and solve problems of relevance to society to meet the specified needs using the knowledge, skills and attitudes acquired from humanities/ sciences/ mathematics/ social sciences.

PO3 Computational Thinking: Understand data-based reasoning through translation of data into abstract concepts using computing technology-based tools

PO4 Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO5 Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings

PO6 Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO7 Global Perspective: Understand the economic, social and ecological connections that link the world's nations and people.

PO8 Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO9 Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO10 Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes

Exercise II: Writing PSO statements

This session will be dealt with *How to state the Program Specific Outcomes (PSO)?*

PSOs are specific to a program and are to be attained at the time of graduation from the program. They are to be identified by a committee with representation from all stakeholders.

All participants to have done this exercise compulsorily

- The PSO statement should start with one or more action verbs.
- The action verbs should be followed by clearly identified knowledge, skills and attitudes, and if required by the conditions under which the actions have to be performed.

Some examples of action verbs

- Formulate, specify, conceive, design, plan, architect, build, implement, test, operate, perform, understand
- Select
- Analyse, determine, estimate, calculate

The PSOs are to be entered in this table.

PSO	PSO Statement
PSO1	
PSO2	
PSO3	
PSO4	

Blooms Taxonomy

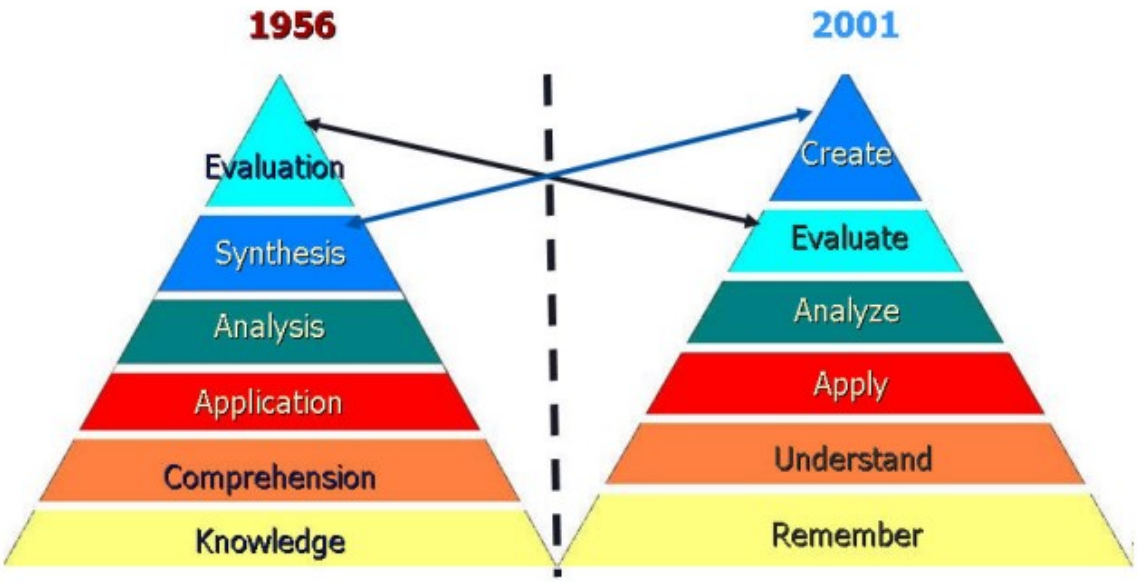
The taxonomy adopted in the workshop for stating the outcomes & assessment tools are based on the Bloom's Revised Taxonomy 2001. Many workers have pointed out the relevance of this model in OBE both in school education as well as in higher education.

Taxonomy of educational objectives with its measurement scheme originally defined by Benjamin S. Bloom and coworkers, was a huge leap towards a modern day outcome-based education (Panthalookaran, 2021). Widely used in the curriculum development, student and teacher assessment, accreditation of institutions providing education, and so on, Blooms' taxonomy heralded a transformation in the conduct of education in the twentieth century by offering a scheme for classifying educational goals, objectives and standards. He also explains that the purposes of developing a taxonomy of educational objectives in 1956 included: (a) to

develop a common language about the learning goal to facilitate communication across persons, subject matter and grade levels; (b) to serve development of national, state and local standards in education; (c) to develop an acceptable assessment scheme for a unit, course, or curriculum; and (d) to expose the range of educational possibilities against which the limited breadth and depth of any particular educational course or curriculum could be contrasted (Krathwohl, 2002).

Hence this is the concept used in the exercises given to the participants for framing the Course Outcomes and the Questions from the respective Course Outcomes.

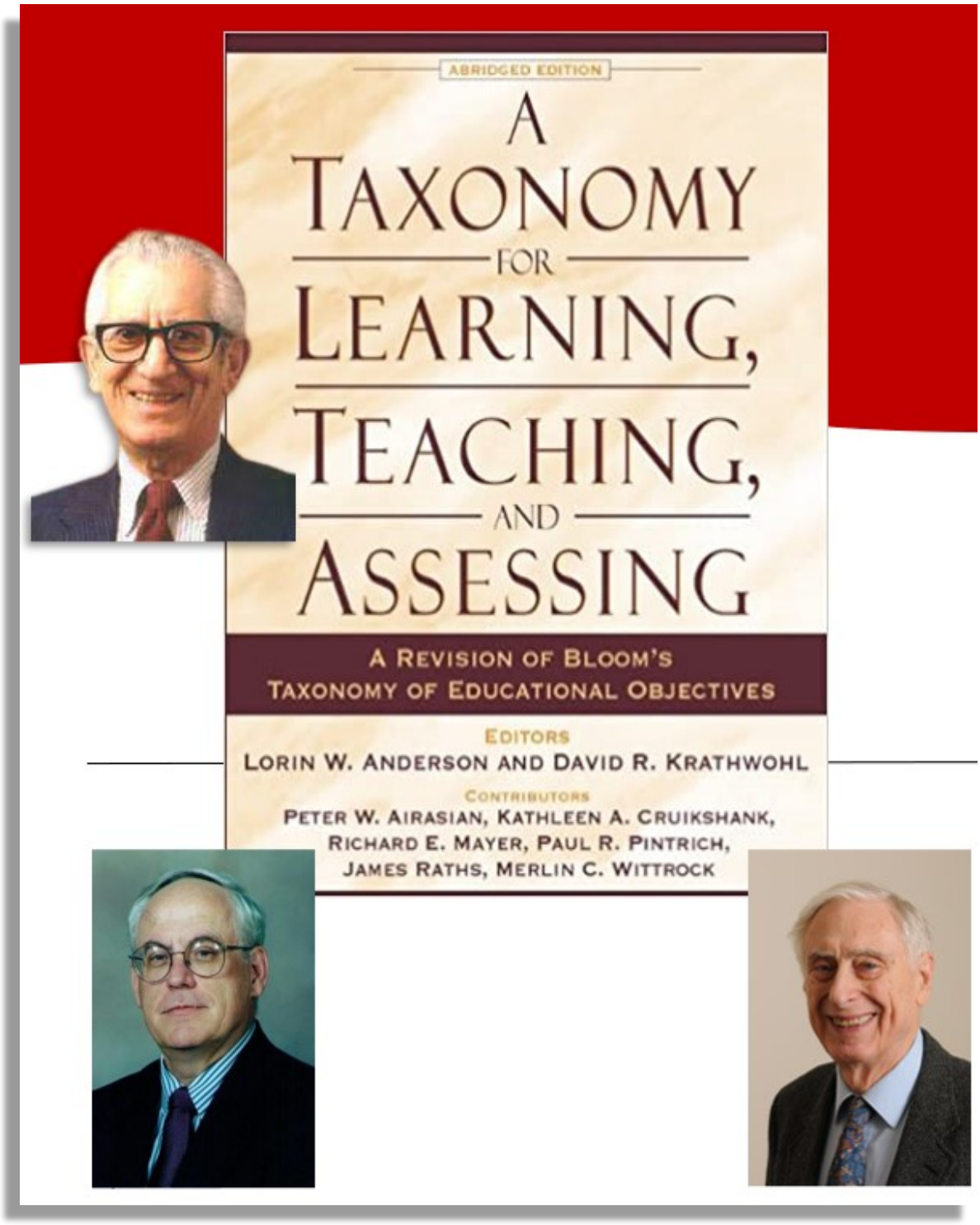
The training sessions are based on the revised taxonomy of 2001, authored by Anderson and Krathwohl, who are the primary authors of the revisions to what had become known as Bloom's Taxonomy — an ordering of cognitive skills. This original taxonomy of Benjamin Bloom had permeated teaching and instructional planning for almost 50 years before it was revised in



(Diagram 1.1, Wilson, Leslie O. 2001)

2001. And although these crucial revisions were published in 2001, surprisingly there are still educators who have never heard of Anderson and Krathwohl or their important work in relation to Bloom's Cognitive Taxonomy. They called together a group of educational psychologists and educators to help them with the revisions. Lorin Anderson was once a student of the famed Benjamin Bloom, and David Krathwohl was one of Bloom's partners as he devised his classic cognitive taxonomy (Wilson, 2016).

As you will see the primary differences are not in the listings or rewordings from nouns to verbs, or in the renaming of some of the components, or even in the re-positioning of the last two categories. The major differences lie in the more useful and comprehensive additions of how the taxonomy intersects and acts upon different types and levels of knowledge — factual, conceptual, procedural and metacognitive (Wilson, 2016).



Exercise III: Questions of Blooms Taxonomic Levels

The cognitive domain deals with a person's ability to process and utilize information in a meaningful way. Give at least one example of activity (or question) at all the six cognitive levels including Remember, Understand, Apply, Analyze, Evaluate and Create related to the courses you are teaching or taught. It is better to take any most familiar course and a single area of instruction which may have all the 6 cognitive to address the activity/question.

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This exercise will enable the participants to easily capture the idea of Cognitive Domain Process levels and to adopt this action verbs in developing appropriate questions according to its 6 levels of learning process.

It is advised to take their most familiar course/ paper from which take a single topic of a module/unit to make sample set of questions or any assessment tool as per the table. While doing so, it will provide the idea that how difficulty face in framing questions/activities when one moves from lower cognitive process to higher cognitive learning process. Also to self-evaluate that where is the position of one's current teaching /learning effort is located within this 6 levels. This exercise will be the fundamental concept in the preparation of Course Outcome Statements.

Cognitive Level	Activity/Activities/Questions
Remember	
Understand	
Apply	
Analyze	
Evaluate	
Create	

Exercise IV: Writing Course Outcome Statements

Write Course Outcomes (6+2 for courses having credits 3:0:0 or 3:1:0 or 3:0:1, and 8+2 for courses with 5 or 6 credits) of a course you taught or are familiar with, paying attention to all the Do's and Don'ts, making sure all the items in check list are checked out.

Dos and Don'ts

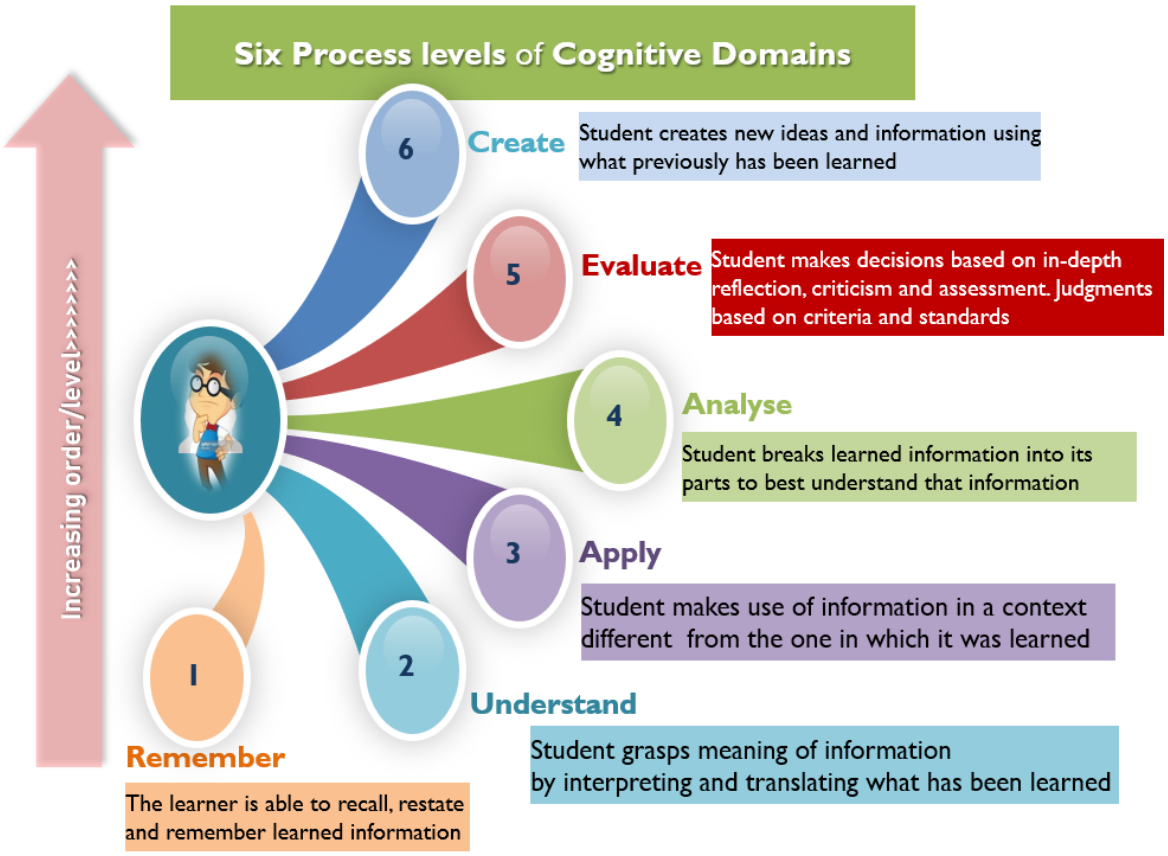
- Use only one action verb (two if absolutely necessary).
- Do not use words including 'like', 'various', 'such as', 'different', 'etc.'

with respect to knowledge elements. Enumerate all the knowledge elements.

- Put in effort to make the CO statement as detailed as possible and measurable.
- Do not make it either too abstract or too specific.

Check List

1 Does the CO begin with an action verb (e.g., state, define, explain, calculate, determine, identify, select, design etc.)?



2 Is the CO stated in terms of student performance (rather than teacher performance or subject matter to be covered)?

3 Is the CO stated as a learning product (rather than in terms of the learning process)?

4 Is the CO stated at the proper level of generality and relatively independent of other COs (i.e., is it clear, concise, and readily definable)?

5 Is the CO attainable (do they take into account students' background, prerequisites, facilities, time available and so on)?

All teachers are expected to attain the skill of Designing their curriculum irrespective of their role as an administrator /Board of Studies member or a classroom tutor only. The fundamental task of designing a curriculum is to frame their own course of interest with subject components of essential nature and emerging areas of knowledge. It also imparts significant skill to design the appropriate activities connected to each part of your syllabus required for the classroom/lab and field situations. The revised taxonomy of Bloom's provides excellent action verbs of subprocesses representing different effort levels of learning. It is the liberty of the respective institution to limit or expand their scope of Course contents within the larger frame ranging from Remember to Create.

In most of the existing syllabi of the courses of our UG or PG programmes, the Units/Modules are filled with learning components without much congruence. They are usually placed without any proper alignment. Therefore, while writing course outcomes referring the existing syllabi of a Course may not produce a systematic CO statement. There may be one or two CO required to address a single Module/Unit.

The fundamental concept of OBE is to design your curriculum on a blank platform so that no prejudices of the existing course/programme components will interfere you in a new design

process. If we confine your curriculum design process by essentially referring the existing curriculum & syllabus components, you will end by a rehash of the same. Instead, it is pertinent to start with the broad discussions and contemplation with stakeholder groups like Higher Institutions of Learning in their respective disciplines, Important Employer Groups, Social & Environmental experts, subject-specific scholars from emerging areas of the discipline etc.

UGC mandates that it is advisable to redesign the curriculum in every University and Autonomous institutions at an interval of 3 years so that the global trends and emerging knowledge areas can be incorporated and the overall content get be updated on time to time manner.

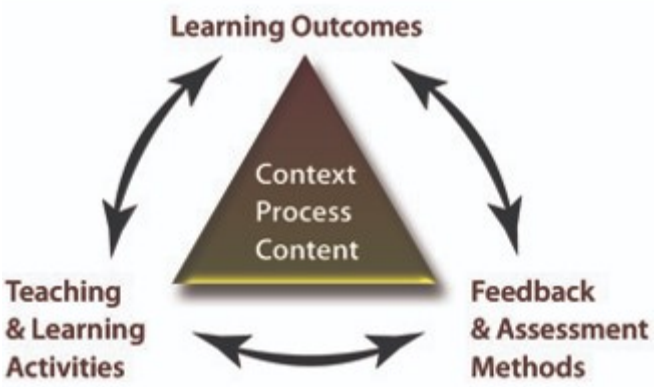
Programme: B.Sc. Geology
Name of Course: Stratigraphy & Palaeontology
Mention Credits given: [3:0:0] (LTP)

CO No.	CO Statement
CO1	
CO2	
CO3	
CO4	
CO5	
CO6	
CO7	
CO8	

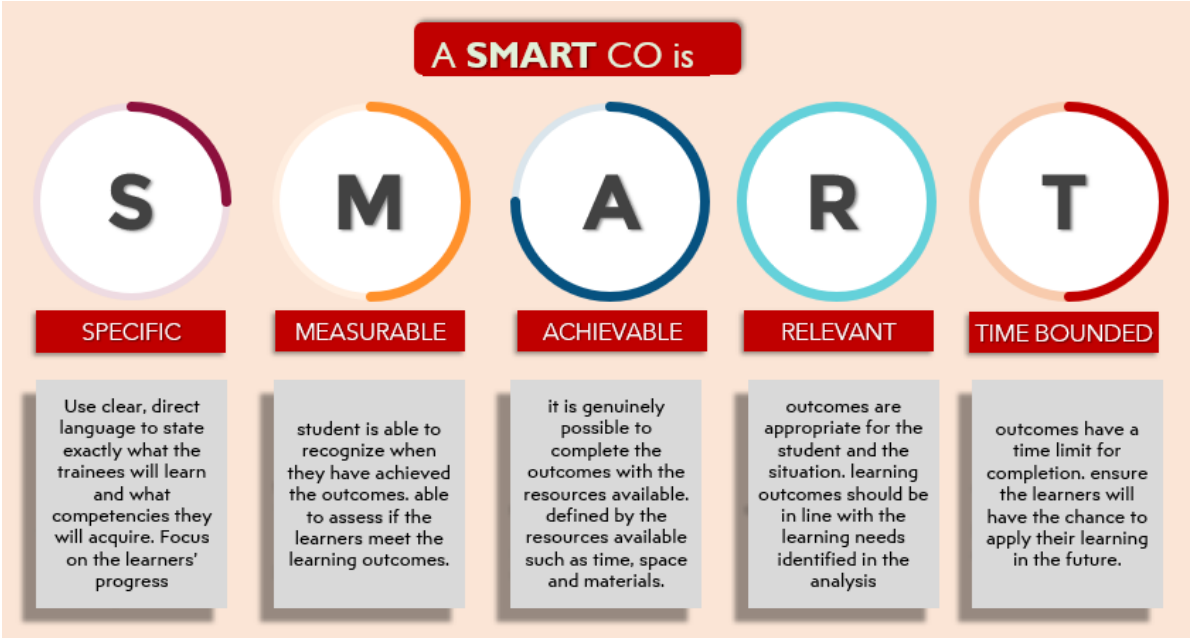
L: Lecture Hours, T: Tutorial Hours P: Practical Hours

Similarly, a proper alignment of the Outcome Statements, Teaching & Learning process, Assessment Mechanism is very inevitable for a success of educational process envisioned by a society. It also demands a fool-proof feedback methodology to receive genuine suggestions from all stakeholder community. There are many instances that student obtains no practical experience of what taught in the classrooms, especially even in the most demanding situations of a social or natural science disciplines. It is surprised to see the feedback from high school children they are taught about magnetism without even having one bar magnet demonstrated in the classroom. Considering such awkward situations, the alignment of all these components

is essential and to be supported with active experiential learning methods. While framing the course contents, the designer is expected to suggest the tools, activities and field situations required to contribute the effective learning process of the topics concerned.



The COs must be prepared in view of the existing group of students enrolled in the institution, their learning capacity, facilities available in the institutions, social background, faculty preparedness etc. Without considering the real situation and academic facilities of an institution, the over ambitious COs will be a failure and cannot be successfully achieved.



There is a keyword for framing Course Outcomes. Each of the CO statement must be Specific, Measurable, Achievable, Relevant, Time bounded. If we ensure these in each CO statement prepared, it will be an implementable one.

Once the CO statements are prepared as part of the training, that will be subjected to verification and subsequently a representative of each discipline will display the same in common for other to adopt the method.

CHAPTER VI

STATUS OF OBE IN STATE UNIVERSITIES

Time Frame for Completion

Graduate attributes (GAs) are what a university promises for its graduates become a mandatory practice of quality assurance in universities almost everywhere in the world except India. Being the essence learning outcomes, the GAs presupposes OBE by determining learning outcomes as the first step in course designing and decide the nature and method of evaluation (Rajan Gurukkal, 2019). It necessitates that at different levels of higher education, each academic programme should have its own anticipated outcomes, explained logically in alignment with the level of knowledge expected. The following table shows the major multidisciplinary Universities in the State with affiliated colleges, programmes and student population.

Multidisciplinary Universities in the State & its nature			
Universities	Total Programmes	Total Students	No. of Affiliated colleges
University of Kerala	33	132621	189
MG University	56	145746	273
CUSAT	33	4202	0
University of Calicut	38	211558	392
Kannur University	27	18721	105
Sankaracharya University	22	3824	0

Total programmes are considered based on the syllabi revision made and posted on website of the respective university PG Programmes
Total Students includes university departments & Affiliated colleges
MG University is Mahatma Gandhi University
CUSAT is Cochin University of Science and Technology
Sankaracharya University is Sree Sankaracharya University of Sanskrit

On the basis of requests from the universities and HE institutions for obtaining training on OBE for the first time as well as for refining the already prepared OBE structure of Programmes and Courses, the Council undertakes hands-on-training programmes in specific duration of time.

Most of the policy documents on higher education including National Education Policy 2020 discuss about closing the gap in achievement of learning outcomes, classroom transactions will shift, towards competency-based learning and education. The assessment tools (including assessment “as”, “of”, and “for” learning) will also be aligned with the learning outcomes, capabilities, and dispositions as specified for each subject of a given class (MHRD, 2020).

Considering the number of affiliated Institutions including autonomous colleges and programmes constitute huge number of board of studies, the implementation and to evolve a comprehensive curriculum incorporating OBE pattern is a cumbersome activity. This needs

sufficient time for awareness among the teaching and student community through training and administrative preparation. Intensive training is required at various phases of development of the curriculum framed under OBE. All multidisciplinary universities in the State have introduced OBE scheme at various extent in their curriculum components. By the beginning of 2024-25 academic year, it is hopeful that universities to adopt the OBE framed curriculum from (Level I) course redesigning, (Level II) instruction methods and (Level III) assessment methods of universities and autonomous institutions. The actual attainment of OBE or the quality level impact on students can be observed after a minimum period of five years since the implementation of OBE in the institutions.

No	Name of University	Expected Academic Year[3]	Whether trained	Status
1	University Kerala	2022-23	Yes	Yes
2	Mahatma Gandhi University	2022-23	Yes	Yes
3	APJ Abdul Kalam Technological University	2022-23	Yes	Yes
4	Calicut University	2022-23	Yes	Yes
5	Kannur University	2022-23	Yes	Yes
6	Kerala Agricultural University	2023-24	No	No
7	Kerala Veterinary and Animal Science University (KVASU)	2023-24	No	No
8	Kerala University of Fisheries and Ocean Sciences (KUFOS)	2023-24	No	No
9	TEMU Tirur (Malayalam University)	2022-23	Yes	Yes

Outcome Auditing /Outcome Attainment

Prof. Rao has designed different methods of computing the outcome attainment and which has been recognised by the NAAC and UGC. The state can also adopt the same method he provided through direct and indirect attainment of Course Outcomes in terms with its cognitive levels based on taxonomy of learning mainly Blooms Revised Taxonomy 2001. He also devse methods for assessing the mapping strength of COs with corresponding POs and PSOs. Once the OBE scheme-based instruction, assessment methods are implemented in the curriculum through the internal and external evaluation schemes, it is easy to compute the attainment of outcomes through any method adopted as per the suitability and acceptance by the academic community.

The process of *auditing* or the *measuring* the attainment of outcomes are dependent on the extent of OBE adopted by the respective university or institution. There are established

[3] *Subject to the frequency of curriculum revision adopted by the respective university*

methods to measure this progress or fulfilment. The learner (student) who underwent through the process of education practiced under OBE is expected to deliver higher graduate attributes in his career, education and life. This is measurable at a certain extent only. But in overall perspective, the stakeholder institutions that nurture the student or offer employability to students are the major players in evaluating the auditing process of outcome-based education in general.

In order to assess the status of OBE progress in Universities, a set of criteria can be used. The syllabi details obtained from the official website of the above universities are examined based on such criteria. They may include the following:

- Programme Outcomes (POs); whether the university has declared Graduate Attributes or Programme Outcomes in general for PG programmes
- Programme Specific Outcomes (PSOs); whether the discipline specific outcomes are prepared in a consistent manner across various disciplines in structure and quality
- Course Outcomes (COs); whether COs are prepared or not; Is it based on any standard Taxonomy of Learning in structure and quality
- Class Hour distribution: whether realistic hour distribution is given for COs as well as modules/units of a course
- Taxonomic Descriptions: Whether the COs are framed based on a system of learning taxonomy or not. Many universities have used action verbs based on Bloom's revised Taxonomy
- Alignment of outcomes: whether the POs, PSOs, COs tagging are done on prescribed format with their respective components of taxonomy of learning like (cognitive level, knowledge category) and hour distribution

Workshops

The workshop primarily involves the following sessions and at the end of the workshop, the participants are equipped to identify the appropriate graduate attributes/programme outcomes applicable to university level/autonomous college. They will also be familiar to write down the Programme Specific Outcomes of the subject they belong in 3-4 PSOs. In a course level/instructional level, they will also be prepared to write course outcomes of 6-8 in number for any specific courses they have proficiency in teaching. Subsequently, the mapping of the COs, PSOs and POs are done and also to identify the attainment level computation of these outcomes.

Programme Schedule of Two Day -Workshops:

Day 1

09.30-10.00: Inauguration
10.00-11.15: Keynote Address by Prof. Rajan Gurukkal
11.30-12.15: OBE, Accreditation and Program Outcomes by Prof. Rajan Gurukkal
12.15-13.00: Exercise 1, Identify the Program Outcomes (PO) and Writing PSOs
14.00-14.45: Taxonomy of Learning
14.45-15.15: Exercise 2, Writing Cognitive Level examples
15.30-16.00: Course Outcomes
16.00-17.00: Exercise 3, Writing Course Outcomes

Day II

09.30-10.30: Fine Tuning Course Outcomes (Exercise 3 based)
10.30-11.15: Tagging of Course Outcomes
11.30-12.30: Exercise 4, Tagging of Course Outcomes
12.30-13.00: Credit/Hours Allocation
14.00-14.30: Question Setting with OBE-tips
14.30-15.15: Mapping strength, Attainment of COs, PSOs and POs
15.30-16.30: Closing the loop. Feedback and Discussions.

Therefore, the workshop outcomes can be briefly divided to the following parts.

- Understand what Outcome Based Education is and how to choose Program Outcomes/Graduate Attributes
- Understand the Anderson-Bloom taxonomy of learning
- Write Program Specific Outcomes (PSOs) for all specific programmes on Undergraduate level for a general higher education program
- Write Course Outcomes (COs) for a general course to meet the selected subset of Program
- Outcomes and Program Specific Outcomes.
- Compute the attainment of COs, PSOs and Pos

Action Plan

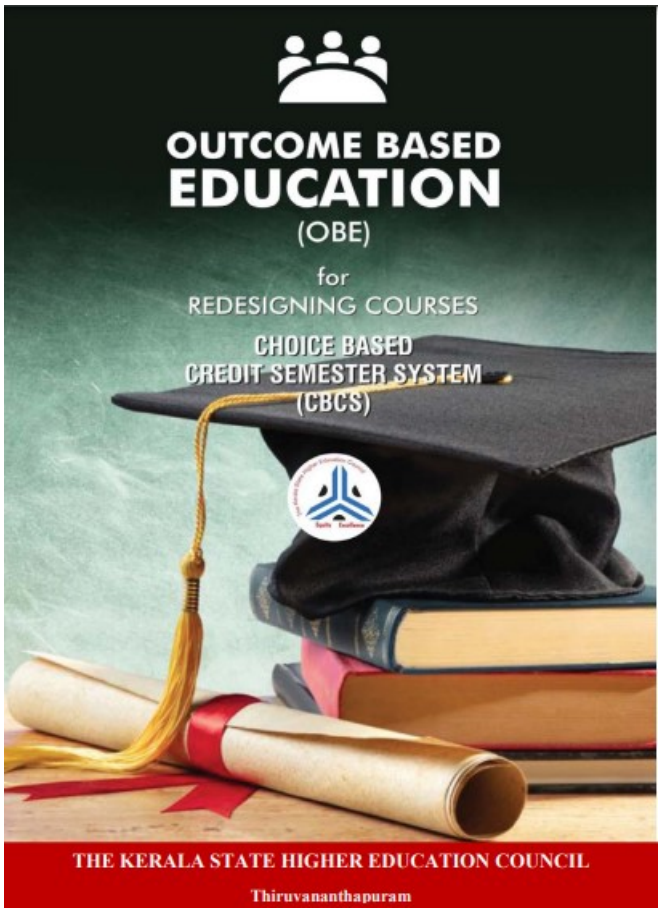
In order to make it in to practice the outcomes of the workshop, KSHEC and the resource persons are available for any technical or resource support in curriculum redesigning process. Universities are in the run of curriculum revision with the idea conceived by the BoS members from the training & subsequent support provided by the Council for designing the curriculum/syllabi. The council is observing the progress in this matter at university/autonomous institution level.

A general consensus among the academic community especially the BoS members of HEIs are inevitable for the successful implementation of OBE. The commission report of the Curricular Reforms Committee has suggested the implementation of OBE in the new curricular framework & upcoming syllabus structure.

CHAPTER VII
IMPLEMENTATION TOOLS OF OBE

First Edition of Handbook on OBE

The Council has published the comprehensive Handbook for Implementing Outcome Based Education in HEIs in the State. Originally published in 2020, this volume contains detailed process of writing Outcome Statements at Three levels (PO, PSO, CO). It also included the attainments of Outcomes through a very simple and effective computation method. This handbook is an ideal tool for reference while framing the designing of curriculum. The Council has also made useful documents for PG Curriculum & Examination Reforms which also have a blended nature of OBE. The handbook has borrowed the extracts of workshop manual for OBE authored by Prof. N.J. Rao and Dr. Rajanikanth as part of the workshops held at University level. It also includes the Minimum Course Curriculum For Undergraduate Courses Under Choice Based Credit System published by UGC and the UGC Guidelines on Adoption of Choice Based Credit System (CBCS). It has important workshop authored by Prof. N.J. Rao, who has an additional part explains the context and process of Choice Based Credit Semester System introduced by the UGC as well as the emergence of Assessment & Accreditation process in the country. The first edition of the Handbook contained the procedure for writing the three levels of Outcomes as well as the attainment of these outcomes.

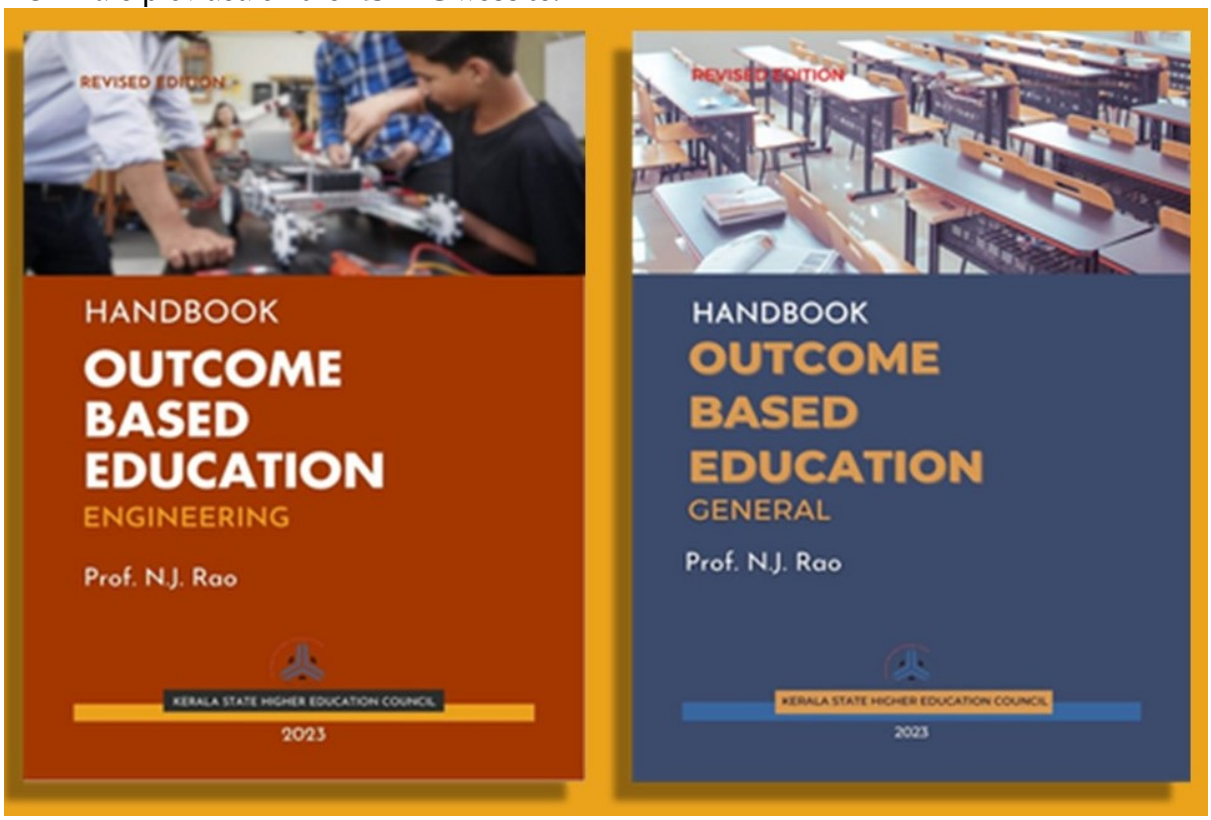


Second Edition of Handbook on OBE

Since the domain level difference in teaching and learning practice followed in professional & engineering education, Prof. N.J. Rao has authored two separate handbooks for General Education Programmes and Professional Education Programmes in separate reprints which describes the curriculum redesigning process for UG as well as PG programmes. In this revised

edition release by the Hon'ble Minister for Higher Education and Social Justice Dr. R. Bindu, on 3 May 2023, the author mainly focusses on outcomes like PO, PSO, CO along with Taxonomy of Learning based on Revised Blooms Taxonomy 2001. Cognitive, Affective & Psychomotor domains and its sub processes are explained in detail. For more effective understanding this edition skips the Methods of Computation of Attainment and the Strength of Mapping but to include as a separate edition.

In their respective portions, appropriate examples of POs, PSOs, COs are given for various disciplines. Handbook is very helpful for the designers in Curriculum especially teachers can obtain first hand learning for the implementation of OBE framework in their courses and programmes. Large number of HE institutions in the State are benefitted by the workshops organised by the Council. The participants in such hands-on workshops are supported by the handbook while completing the exercise given in various sessions. All publication related to OBE are provided on the KSHEC website.



A considerable progress in implementation of OBE structure in newly restructured curriculum is evident in all Universities in the State. POs, PSOs and COs are presented in statements. In most of the programmes, these components have been tagged to each other and the remaining task is to measure through appropriate assessment tools. Although there are structural defects in outcome statements, nature of tagging, use of appropriate action verbs etc are visible, they can be rectified by revisiting through subject committees. With respect to the number of PSOs

to be written for each programme, there shall be imposed a general consensus in among the BoS and subject committees. It is ideal to limit the number of PSOs to 2 or 4, depend on the nature of the programme. It is not suitable to write lengthy and large number of PSOs for any programme is not advisable, since the purpose of PSO is to provide an outline of the programme that a student is enrolled.

Training Support by KSHEC

The Council provides Hands-On-Training support to the Institutions & their faculty based on the formal request receives before the Member Secretary, KSHEC. These sessions are handled by experts like Prof. N.J. Rao and other in-house resource persons of the Council including the Research Officers as well as those trained faculty members from various Institutions. Many of the Faculty Development Programmes & Moodle based LMS training sessions are also having the OBE components in their curriculum. These OBE trainings are provided by the Council without charging any financing burden to the requesting HEIs.

The *Journal Higher Education for the Future* a Sage Publication has released an issue dedicated for Outcome Based Education which articles related to the contains four articles directly relate to OBE's general and particular aspects. N. J. Rao's article comprehensively deals with the theory and practice of OBE. Other articles by Manulal P. R. and Shefeeque V. draw on discipline-specific issues and effects of OBE. Through the process of continuous training by KSHEC, a large number of Institutions have been gained this benefit through which they are capable to implement OBE scheme of teaching-learning components in the classroom lectures, activities, assessment tools like question bank as well as computing the attainment of these outcomes. These institutions belong to Government, Aided and Unaided sectors. Mostly of 2 days duration, the Resource Persons engage in providing hands-on exercises to the participants on subject wise groups and to verify the outcome statements of PO, PSO, CO levels and suggest changes if required.

KSHEC continues to provide the training support to all Institutions based on their request and preparedness for redesigning the courses for their internal teaching -learning process even before being implemented by the respective University they affiliated with. The initiative of KSHEC to introduce OBE in the educational platform in Kerala has been a spearheading activity for all HEIs in the State to make their faculty trained in OBE availing this facility or organising such training on their own capacity. A large number of experienced Resource

Persons from various Institutions have come forward to provide OBE based training in State HEIs over this period.

A list of such trainings provided by KSHEC team during this period is shown in Table II.

CHAPTER VIII
ANNEXURES
TABLE II
PHASE II: COLLEGE LEVEL WORKSHOPS HELD
(AUTONOMOUS AND AFFILIATED COLLEGES)

No	Programme	Beneficiary Group	Period
25	Outcome Based Education Faculty Members of Christhu Jyothi College, Changanassery RP: Dr. Manulal P. Ram	Christhu Jyothi College, Changanassery No. of Participants:22	4-3- 2023
23	Outcome Based Education (One Day workshop) Henry Baker Memorial College, Melukavu Kottayam RP: Dr. Manulal P. Ram	Faculty members of Henry Baker Memorial College, Melukav, Kottayam No. of Participants: 30	30-4-2022
22	Outcome Based Education Two Days workshop Catholicate College, Pathanamthitta RP: Dr. Manulal P. Ram	Faculty members of Catholicate College, Pathanamthitta, Baselius College, Kottayam, & KG College Pampady No. of Participants: 65	20 - 21 May 2022
21	Outcome Based Education Two Days workshop National Institute of Speech and Hearing (NISH), Tvpm RP: Dr. Manulal P. Ram & Dr. Shefeeque V.	Faculty members of National Institute of Speech and Hearing (NISH), Thiruvananthapuram No. of Participants: 25	23 - 24 May 2022
20	One week Hands-on Training on Outcome Based Education (OBE) Resource Person: Dr. Manulal P. Ram, KSHEC Dr. Shefeeque V.	Faculty Members of S.N. College, Kollam Venue: Online No. of Participants: 110	14-21 June 2021
19	Training in Outcome Based Education (OBE) Resource Person: Dr. Manulal P. Ram, KSHEC Dr. Shafeeque V., KSHEC	Faculty Members of Kerala Fisheries and Ocean Sciences, (KUFOS) Kochi Venue: KUFOS Campus Kochi No. of Participants: 60	16-2-2021
18	Hands-on Training in Outcome Based Education (OBE) Resource Person: Dr. Manulal P. Ram, KSHEC Dr. Shafeeque V., KSHEC	Faculty Members of MES College, Erumely Venue: MES College, Erumely No. of Participants: 40	05-3-2021 to 06-3-2021

No	Programme	Beneficiary Group	Period
17	Outcome Based Education (Webinar) Resource Person: Dr. Manulal P. Ram, KSHEC	Teaching faculty of various institutions, St.Thomas College (Autonomous) Thrissur No. of Participants attended: 350	13-5-2020
16	OBE-Workshop Resource Persons: Dr. Manulal P. Ram, KSHEC Dr. Shafeeque V., KSHEC	Faculty Members Thunchath Ezhuthachan Malayalam University, Tirur Venue: University Campus Vakkad No. of Participants: 26	10-11-2020 to 11-11-2020
15	Live Hands-on Training in Outcome Based Education (OBE) Resource Person: Dr. Manulal P. Ram, KSHEC	Faculty Members of Amala College of Nursing, Thrissur Venue: Zoom Meeting No. of Participants: 30	16-12-2020 to 23-12-2020
14	OBE-Workshop Resource Persons: Dr. Manulal P. Ram, Dr.Saji Mathew, Dr. Shafeeque V., KSHEC	Faculty Members Mar Ivanios College, Nalanchira Venue: Mar Ivanios College No. of Participants: 50	24-25-2020
13	Revisiting POs, PSOs and COs Resource Person: Dr. Manulal P. Ram, & Dr. Shafeeque, KSHEC	Teaching faculty of St.Thomas College (Autonomous) Thrissur Venue: St. Thomas College, TSR No. of Participants: 26	10-2-2020
12	Outcome Based Teaching and Evaluation (OBTE) Resource Person: Prof. Rajan Gurukkal, KSHEC, Dr. Shefeeque V, KSHEC Dr. Saji Mathew KSHEC	BoS members of Vimala (Autonomous) College, Thrissur No. of Participants: 120	27-6-2019
11	Outcome Based Teaching and Evaluation (OBTE) Resource Person: Prof. Rajan Gurukkal, KSHEC, Dr. Manulal P. Ram, KSHEC & Dr. Ajay K., Govt. College, Kottayam	UG-BoS members of Sacred Heart (Autonomous) College, Thevara, Ernakulam Venue: SH College, Thevara No. of Participants: 54	02-5-2019 To 03-5-2019
10	Outcome Based Education Resource Person: Dr. Manulal P. Ram, KSHEC Dr. Ajay K., Govt. College, Kottayam Mr. Vijayakrishnan M., Govt. College, Chittur	UG-BoS members of fatima Mata National (Autonomous) College, Kollam Venue: FMN College, Kollam No. of Participants: 52	14-5-2019 To 15-5-2019

No	Programme	Beneficiary Group	Period
9	Outcome Based Education Resource Person: Prof. Rajan Gurukkal, KSHEC, Dr. Manulal P. Ram, KSHEC & Dr. Saju T.S. SSUS	UG-BoS members of Christ College (Autonomous) Irinjalakuda Venue: Christ College Irinjalakuda No. of Participants: 54	22-5-2019 To 23-5-2019
8	Outcome Based Education Resource Person: Dr. Manulal P. Ram, Dr.Shafeeque, Dr. Saji Mathew KSHEC Dr.Ajay K., Govt. Kottayam	UG-BoS members of St.Teresa's College, Ernakulam Venue: St.Teresa's College No. of Participants: 52	24-6-2019 To 25-6-2019
7	Outcome Based Education Resource Person: Dr. Manulal P. Ram, Dr.Shafeeque, KSHEC Dr. Saji Mathew KSHEC	UG-BoS members of St.Josephs College (Autonomous) Irinjalakuda Venue: College, Irinjalakuda No. of Participants: 60	15-7-2019 To 16-7-2019
6	Outcome Based Education Resource Person: Dr. Manulal P. Ram, Dr.Shafeeque, Dr. Saji Mathew KSHEC	UG-BoS members of St.Thomas College (Autonomous) Thrissur Venue: St. Thomas College, TSR No. of Participants: 56	26-8-2019 To 27-8-2019
5	Outcome Based Education Resource Person: Dr. Manulal P. Ram, & Dr.Shafeeque, KSHEC	Faculty Members of St. Xavier's Women's College Aluva No. of Participants: 48	5-10-2019
4	Outcome Based Education Resource Person: Dr. Manulal P. Ram, & Dr.Shafeeque, KSHEC	UG-BoS Members of MES Mampad (Autonomous) College, Mampad Venue: MES College, Mampad No. of Participants: 38	9-10-2019 to 10-10-2019
3	Outcome Based Education Resource Person: Dr. Manulal P. Ram, & Dr.Shafeeque, KSHEC	Faculty Members of Layola College of Social Sciences, Trivandrum Venue: Layola College No. of Participants: 20	14-10-2019

No	Programme	Beneficiary Group	Period
2	OBE-Hands-On-Training Resource Persons: Prof. Rajan Gurukkal, Dr. Manulal P. Ram, Dr.Shafeeque, Dr. Saji Mathew KSHEC & Dr.Ajay K., Govt. Kottayam	Faculty Members of different Colleges Venue: St. Xavier's College for Women No. of Participants: 60	28-29 October 2019
1	Outcome Based Teaching and Evaluation (OBTE) Resource Person: Dr. Manulal P. Ram, KSHEC and Sri. Vijayakrishnan, Govt. College, Chittur	UG-BoS members of Maharajas (Autonomous) College, Ernakulam Venue: Maharajas College, Ernakulam No. of Participants: 40	11-12 March 2019

APPENDIX Table I
List of Teachers participated in the 3 day workshop
University of Kerala
Redesigning of Courses for Outcome Based Education (OBE)
At Kerala State Higher Education Council

i. Dr. George Thomas
Member, BoS in Aquatic Biology and Fisheries
Assistant Professor
Dept. of Zoology, University College, Thiruvananthapuram.

ii. Dr. P. I. Paul
Member, BoS in Aquatic Biology and Fisheries
Associate Professor
Department of Zoology, Mar Ivanios College, Nalanchira.

iii. Dr. P. Mohanachandran Nair
Chairman, BoS in Demography
Professor and Head
Department of Demography, University of Kerala, Kariavattom.

iv. Dr. Shinu. N.
Member, BoS in Geology
Assistant Professor
Dept. of Geology, University College, Thiruvananthapuram.

v. Dr. E. Shaji
Member, BoS in Geology
Assistant Professor
Dept. of Geology, University of Kerala, Kariavattom.

vi. Dr. Mini.S
Member, BoS in BioChemistry
Associate Professor
Department of BioChemistry, University of Kerala, Kariavattom

vii. Dr. Annie Abraham
Chairperson, BoS in BioChemistry
Professor and Head
Department of BioChemistry, University of Kerala, Kariavattom

viii. Dr. K. G. Ajithkumar
Member, BoS in Botany.
Associate Professor
Dept. of Botany, Govt. College for Women,
Thiruvananthapuram.

ix. Smt. Bindu Somanathan
Chairperson, BoS in Geography
Associate Professor
Dept. of Geography, University College, Thiruvananthapuram.

x. Smt. Aswathy Sugunan
Member, BoS in Home Science
Assistant Professor and Head
Department of Home Science,
SN College for
Women, Kollam

xi. Dr. Swapna T. S.
Member, BoS in Botany
Associate Professor
Dept. of Botany, University of Kerala, Kariavattom

xii. Dr. V. Sadasivan
Member, BoS in Chemistry
Associate Professor
Dept. of Chemistry, University College, Thiruvananthapuram.

xiii. Dr. S. Selsa
Member, BoS in Home Science
Assistant Professor
Department of Home Science, SN College for Women, Kollam

xiv. Dr. S. K. Subhash
Member, BoS in Microbiology
Assistant Professor
Department of Microbiology, Sree Narayana College for Women, Kollam,

xv. Dr. Sony George
Member, BoS in Chemistry
Assistant Professor
Dept. of Chemistry University of Kerala, Kariavattom

xvi. Dr. V. S. Harikumar
Chairman, BoS in Microbiology
Associate Professor and Head
Department of Botany, Sanatana Dharma College, Alapuzha

xvii. Dr. V. Gopakumar
Chairman, BoS in Physics
Associate Professor and Head
Dept. of Physics Govt. College for Women, Thiruvananthapuram.

xviii. Dr. Jayasree V.
Member, BoS in Physics
Associate Professor
Dept. of Physics KSMDB College, Sasthamcotta.

xix. Dr. M. S. Vidia Panicker
Member, BoS in Zoology
Associate Professor
Dept. of Zoology, SN College, Chempazhanthy.

xx. Dr. P. Sreejith
Member, BoS in Zoology
Assistant Professor
Dept. of Zoology, University of Kerala, Kariavattom.

xxi. Dr. Swapna Ramachandran
Chairperson, BoS in Psychology
Assistant Professor
Dept. of Psychology University College, Thiruvananthapuram.

xxii. Dr. Sonia George
Member, BoS in Psychology
Assistant Professor Dept. of Psychology
Govt. College for Women, Thiruvananthapuram

xxiii. Dr. G. Nagendra Prabhu
Chairman, BoS in Bio-Technology
Assistant Professor
Department of Zoology
S D College, Alappuzha.

xxiv. Dr. D. S. Jaya
Associate Professor and Head
Chairperson, BoS in Environmental Sciences, Department of Environmental Sciences, University of Kerala,

xxv. Dr. Jairani P. S.
Member, BoS in Bio-Technology
Assistant Professor
Department of Biotechnology
Government College, Kariavattom.

xxvi. Dr. V. Salom Gnana Thanga
Associate Professor
Member, BoS in Environmental Sciences
Department of Environmental Sciences
University of Kerala, Kariavattom.

xxvii. Dr. Gladston Raj S
Chairman, BoS in Computer Science
Assistant Professor & Head
Department of Computer Science
Government College, Nedumangad.

xxviii. Dr. Manoj Changat
Chairman, BoS in Futures Studies
Professor & Head
Department of Futures Studies
University of Kerala, Kariavattom

xxix. Dr. D. Muhammad Noorul Mubarak
Member, BoS in Computer Science
Assistant Professor
Department of Computer Science
University of Kerala, Kariavattom.

xxx. Dr. Annie Abraham
Member, BoS in Futures Studies
Associate Professor
Department of Mathematics
Mar Ivanios College,
Thiruvananthapuram

xxxi. Dr. S. Sankararaman
Chairman, BoS in Electronics
Reader
Department of Optoelectronics
University Campus, Kariavattom.

xxxii. Dr. V. Biju
Member, BoS in NanoScience and NanoTech.
Assistant Professor
Department of Physics
University of Kerala, Kariavattom.

xxxiii. Dr. N. Gopakumar
Member, BoS in Electronics
Associate Professor and Head
Department of Physics, MG College,
Thiruvananthapuram.

xxxiv. Dr. V. P. Mahadevan Pillai
Chairman, BoS in Optoelectronics
Professor
Department of Optoelectronics
University of Kerala, Kariavattom.

xxxv. Dr. K. G. Gopchandran
Member, BoS in Optoelectronics
Associate Professor
Department of Optoelectronics
University of Kerala, Kariavattom.

xxxvi. Dr. Achuthsankar S. Nair
Chairman, BoS in Computational Biology &
Bioinformatics
Professor and Head (i/c)
Department of Computational Biology & Bioinformatics
University of Kerala, Kariavattom .

xxxvii. Dr. Vrinda V. Nair
Member, BoS in Computational Biology & Bioinformatics
Professor Department of Electronics & Communication
College of Engg, Thiruvananthapuram.

Appendix Table II
List of Participants in Workshop
Redesigning Of Courses For Outcome Based Education (Obe)
For MG University (Bos), Kottayam

Name and Address	Name and Address
Dr. Abraham K J Chairman, BoS (Aquaculture (UG)), Asst.Professor, St.Xaviers College Vaikom, Kottayam	Mrs. Reenamol S. Asst. Professor, Dept of Biotechnology, SNDP College, Kumarakom Kottayam
Dr. Suja N. Asst. Professor Aquaculture Dept. of Zoology St. Aloysious College Edathala, Ernakulam	Dr. Suma Bino Thomas Chairman, BoS (Chemistry(UG)), HoD, Asso.Professor, Baselius College, Kottayam
Dr. Sandhya C Chairman, BoS (Biochemistry(UG)), Asst.Professor, KE College,Mannanam Kottayam	Dr. Rose Philo KJ Asso. Professor, St. Pauls College, Kalamassery Ernakulam
Dr. Annie. Y. Asst. Professor Biochemistry. School of Biosciences. M. G. University. Priyadarsini Hills, Kottayam	Shri. Shyam Kumar K Chairman, BoS (Computer Application (UG)), HoD, Asso.Professor, NSS College, Rajakumari
Dr. Indu C Nair Chairman, BoS (Biotechnology (UG)), HoD, Asst.Professor SAS SNDP Yogam College, Konni Pathanamthitta	Smt. Maya. N Asso. Professor NSS Hindu College, Changanacherry Kottayam

Name and Address
Dr. Praveen N Chairman, BoS (Electronics (UG)), HoD, Asso.Professor, NSS College, Rajakumari Idukki
Mr. Jacob Abraham Associate Professor BPC College, Piravom Ernakulam
Shri. Dilip Kumar P.G. Chairman, BoS (Geology(UG)), HoD, Asst.Professor, Govt.College, Kottayam
Shri. Anish A.U. Asst.Professor, Dept. Geology Govt.College, Kottayam
Dr.Anooja Thomas K. Chairman, BoS (HomeS cience (UG)), HoD, Asso.Professor, CMS College, Kottayam
Smt. Sajitha Suseelan S. Asst. Professor Dept. of Home Science Morning Star Home Science College Angamaly Ernakulam

Name and Address
Shri. N Devdath Chairman, BoS (Mathematics(UG)), HoD, Asso.Professor, DB Pampa College, Parumala Pathanamthitta
Shri. Manesh Jacob Asst. Professor Dept. of Mathematics Mar Thoma College Thiruvalla Pathanamthitta
Dr.K Sudha Chairman, BoS (Microbiology(UG)), HoD, Asst.Professor, St.Peters College, Kolencherry Ernakulam
Dr. Jisha M. S. Professor School of Biosciences Mahatma Gandhi University Kottayam
Dr.Roy Sebastian Chairman, BoS (Physics(UG)),HoD, Asso.Professor, St.Josephs College, Moolamattom Idukki
Dr.Sindu Jones Asso Professor Baselius College Kottayam
Sri.Benno Mathew Chairman,BoS Statistics(UG)), Asso.Professor, Sree Sankara College,Kalady Ernakulam

Name and Address
Dr.Dhannya P. Joseph Asst Professor Dept. of Statistics K.E.College Mannanam Kottayam
Dr.P J Benny Chairman,BoS (Zoology(UG)),HoD, Asso.Professor, St.Thomas College,Pala
Dr.Biju John Asso Professor Dept. Zoology St.Marys College Manarcadu Kottayam

Name and Address
Dr.Manikandan K Chairman, BoS (Psychology (UG)), HoD,Professor. Dept. of Psychology, Calicut University
Dr. M. K. Mathew Associate Professor Dr.M.Anilkumar Asst.Professor, Dept. of Botany UC College Aluva Ernakulam
Dr.Shibin Mohan Asst Professor Dept. of Botany Nirmala College Muvattupuzha Ernakulam

Appendix Tabel III
LIST OF PARTICIPANTS IN WORKSHOP
REDESIGNING OF COURSES FOR OUTCOME BASED EDUCATION (OBE)
AT Cochin University of Science and Technology (CUSAT)
For Engineering Disciplines

Sl. No.	NAME	Designation	Department	College
1	Prof V Suresh Babu	Professor	Applied Electronics& Instrumentation / Electronics& Instrumentation	GEC ,Batton Hill ,TVM
2	Dr BINU L S	Associate Professor		College of engineering ,TVM
3	Prof S Jayakumar	Professor	Aeronautical Engineering /Mechanical (Aeronautical)	College of engineering ,TVM
4	Dr ABDUL JALEEL H	Assoc Prof		College of engineering ,TVM
5	Prof K Vijayan	Professor	Automobile Engineering/Mechanical (Automobile)	Amal Jyothi College of Engg,Kottayam
6	Prof U PRAKASH	Professor		Sree Chitra Thirunal College Of Engineering,TVM
7	Dr Jessy John	Professor	Bio Medical Engineering / Electronics & Bio-Medical Engg	Model Engg College ,KOCHI
8	Dr J RAJEESH	Professor		TKMIT,Kollam
9	Prof Giridhar R Nair	Professor	Biotechnology / Biotechnology and Biochemical Engg	Sree Buddha College of Engineering,Alappuzha
10	Dr P P Thomas	Professor		Sree Chitra Thirunal College Of Engineering,TVM
11	Prof V Syam Prakash	Principal	Civil Engineering	Lourd Matha College of Engg
12	Dr. P. G. Jairaj	Professor		College of engineering ,TVM
13	Prof K B Radhakrishnan	Professor	Chemical Engineering	TKMCE,Kollam
14	Dr Manju M S	Assistant Professor		GEC,Thrissur
15	Dr Abdul Nizar	Professor		College of engineering ,TVM

Sl. No.	NAME	Designation	Department	College
16	Dr. Sreelakshmi R	Professor	Computer Science & Engineering/ Computer Engg	College of engineering ,TVM
17	Prof Ciza Thomas	Professor	Electronics & Communication Engg	College of engineering ,TVM
18	Dr Biji Jacob	Assoc. Professor		College of engineering ,TVM
19	Prof B Jayanand	Professor	Electrical & Electronics Engg	GEC Thrissur
20	Prof Imthias Ahammed TP	Professor		TKMCE,Kollam
21	Mr Thomas A Vetteth	Assistant Professor	Safety & Fire Engineering	TOC H IT,Ernakulam
22	Mr V Sumesh	Asso.Professor		College of engineering ,TVM
23	Mr Abhishek S	Assistant Professor	Food Technology	TKMIT,Kollam
24	Dr M Sajeev	Scientist		CTCRI , SREEKARYAM
25	Prof Sreenadhan S	Professor	Instrumentation & Control Engineering	NSSCE, Palakkad
26	Dr Jayalakshmi B	Professor		NSSCE, Palakkad
27	Prof V S Unnikrishnan	Professor	Industrial Engineering	College of engineering ,TVM
28	Dr V Regikumar	Associate Professor		College of engineering ,TVM
29	Prof Balu John	Professor	Information Technology	GEC Bartton Hill,TVM
30	Prof Remesh Babu K R	Assistant Professor		GEC Idukki
31	Prof Jose Prakash M	Professor	Mechanical Engineering	TKMCE,Kollam
32	Dr Anil Lal S	Professor		GEC Bartton Hill,TVM
33	Dr A S Varadarajan	Principal	Mechatronics Engineering	MES College of Engg,Kuttipuram
34	Prof Muhammed Shamnaz P T	Professor		Cochin College of engineering
35	Prof K G Samuel	Professor	Metallurgy	Amal Jyothi College of Engg,Kottayam
36	Prof K Sreekumar	Professor		Amal Jyothi College of Engg,Kottayam
37	Dr Ajith R	Professor	Production Engineering/Mechanical (Production)	Sree Chitra Thirunal College Of Engineering,TVM

Sl. No.	NAME	Designation	Department	College
38	Dr S Jose	Professor		TKMCE,Kollam
39	Prof Satheesh Babu P K	Professor	Naval Architecture & Ship Building	SNGCE, Eranakulam
40	Mr Savin Viswanathan	Assistant Professor		SNGCE, Eranakulam

List of Participants from Cochin University of Science and Technology

No	Name of Faculty	Department
1	Dr George mathew	Dept of Safety and Fire engg
2	Dr Benny Mathews/Dr Job Thomas	Civil Engg
3	Dr Tide P.S	Mechanical Engineering
4	Dr Gopikakumari/Dr CA Babu	Electrical and Electronics Engg
5	Dr Sheena Mathew	Computer Science engg
6	Dr Sumam Mary Idicula /Dr Santhosh Kumar G	Computer Science
7	Dr Supriya	Electronics and Communication systems
8	Dr K.N.Madhusoodanan	Instrumentation
9	Dr Rajini Bhattathiripad	Architecture
10	Dr Honey John	Polymer science and Rubber Technology
11	Dr Dileep Krishnan	Naval Architecture and Ship building
12	Dr P.S.Sreejith	Dean Engineering
13	Dr Sunil Narayanakutty	Dean Technology
14	Dr M.R.R Panickar	Principal SOE
15	Dr Sunil Kumar	Principal CUCEK

Appendix Table IV
LIST OF PARTICIPANTS IN WORKSHOP
REDESIGNING OF COURSES FOR OUTCOME BASED EDUCATION (OBE)
For University of Calicut (BoS)
AT University of Calicut Campus, Tehnjipalam

No	Board of Studies	Name & Address
1	Chemistry	Dr S Jayasree Principal Government Arts and Science College, Calicut
2		Dr Muhammed Basheer Ummathur HoD , Department of Chemistry Unity Womens College, Manjery
3	Zoology	Dr. T.M. Benny Associate Professor St. Joseph's College, Devagiri, Calicut
4		Dr. P.Haridasan Principal Govt. Arts and Science College, Thrithala P.O.Thrithala, Palakkad- 673534
5	Microbiology	Dr. Denoj Sebastian Assistant Professor, Dept of Life Sciences, University of Calicut
6		Dr. Shiji Thomas Assistant Professor, Dept. of Microbiology, EMEA College of Arts and Science, Kondotty
7	Polymer Chemistry	Dr.Nidhin Paul Asst.Professor of Chemistry Govt.Arts & Science College, Kozhikode
8		Dr.Titto Varghese, Asst.Professor of Chemistry, Christ College, Irinjalakkuda
9	Genetics	Dr. Sebastian C. D., Associate Professor, Department of Zoology, University of Calicut

No	Board of Studies	Name & Address
10		Dr. K. C. Chitra, Associate Professor, Department of Zoology, University of Calicut
11	Physics	Vijayakrishnan M V Assistant Professor, Dept of Physics, Govt. College Chittur, Palakkad
12		Mr.A M P Hamza Associate Prof, Physics, MES KVM College, Valancheri.
13	Mathematics	Dr.Harish V.K Asso.Professor, Dept.of Mathematics Govt.College, Mankada
14		Priyadarsan K.P Assistant Professor. Department of Mathematics, CKG Govt. College, Perambra
15	Statistics	Mr.Haridas Associate Professor, Department of Statistics, VTB College, Sreekrishnapuram
16		Mr. Gireesh Babu M Assistant professor. Department of Statistics, Govt.Arts College , Calicut
17	Aquaculture	Dr. Kesavan K Asst . Prof. Aquaculture, MES Asmabi college P.Vemballur 680671
18		Shibu A Nair Dept. of Aquaculture, M.E.S. Asmabi College P. Vemballur, Kodungallur, Thrissur- 680671.
19	Geology	Dr. V.A.Ayisha Dept. of Geology, MES College, Ponnani
20		Dr.V.K.Brijesh Dept. of Geology, MES College, Ponnani
21	Food Technology	Ms.Cibia George Head,Dept.of Food Science &Tech MES Mampad College
22	Industrial	Dr. Sheeja S.R

No	Board of Studies	Name & Address
	Chemistry	Asst.Professor, Dept.of Chemistry Govt.College, Madappally
23		Dr. Mohanakrishnan M Asst.Professor, Dept.of Chemistry NSS College, Ottappalam
24	Environmental Science & Water Management	Dr.John E Thoppil Dept. of Botany, University of Calicut
25		Dr.C.C.Harilal Dept. of Botany, University of Calicut
26	Bio chemistry	Mr.Emmanuel Simon Assistant Professor, Dept. of Life Sciences University of Calicut
27		Dr. Gayathri Devi D Assistant Professor, Dept. of Life Sciences University of Calicut
28	Biotechnology	Dr.Manishkumar P.R Dept.of Biotechnology, University of Calcut
29	Biotechnology	2. Dr.Habeeb Rahman Asst.Professor, Farook College, Calicut
30	Psychology	Dr.Sinto P Anto Dept.of Psychology, Vimala College, Thrissur
31		Dr. Nice Mary Francis.P Dept.of Psychology Prajyothi Nikethan, Puthukkad
32	Catering Science & Hotel Management	Dr.Shemeer Babu.T Assistant Professor, Dept. of Hotel Management, Amal College of Advanced Studies, Nilambur, Malappuram.
33		Mr.Janeesh Babu K P Dept of Tourism and Hotel Mgt, Amal College, Nilambur.
34	Instrumentation	Dr. Venugopal G Associate professor, Department of Instrumentation and Control Engineering N.S.S.

No	Board of Studies	Name & Address
		College of Engineering Palakkad.
35	Plant Science	Prof. P. Manimohan Department of Botany, University of Calicut
36		2.Dr P. Sunojkumar Department of Botany, University of Calicut
37	Home Science	Mrs. Mony Geege, Asst. Professor,Department of Home science, Vimala College, Thrissur
38		Mrs. Anitha Beegum Asst. Professor, Department of Home science, Unity Women's College, Manjeri
39	Computer Science & Application	Dr.Mohammed Illyas.P Principal, SS College, Areekode
40		Beena Cheriyan MAMO College,Mukkam
41	Electronics	Dr.Nobert Thomas Pallath Asso.Professor W.M.O Arts&Science College Muttil, Wayanad
42		Dr. Askarali .P Assistant Professor, Department of Electronics Government College , Tanur
43	Geography	Mr.Prasad K Assistant Professor, Dept. of Geography Govt College Chittur, Palakkad-
44		V Govindankutty Assistant Professor, Dept. of Geography Govt College Chittur, Palakkad.
45	Biophysics	Dr.M.Sabu, Professor, Dept.of Botany,University of Calicut
46	Printing and Information Technology	Ahmed Shafi.P Coordinator, Centre for Printing Technology, University of Calicut
47		Sri. Dinesan.P.P

No	Board of Studies	Name & Address
		TC-24/1644,Mera Nagar 156, Thaicaud 1 (PO), Thiruvananthpuram-14
48	Forensic Science	Dr.G.B.Aravind, Associate professor of Criminology and Forensic science, JSS Medical College, Mysore.
49	Forensic Science	Ranjith. N.K, Asst. Chemical Examiner, Regional Chemical Examiner's Laboratory,Kozhikode.
50	Fashion Designing	Ms.Reena A.R Head, Dept.of Vocational Studies Carmel College, Mala
51		Ms. Sajita M.P Coordinator Centre for Costume & Fashion Designing, University of Calicut
52	Botany	Dr.Swapna K.S Asst.Professor, Govt.Arts & Science College, Kozhikode
53		Dr.Mustafa Anand Assistant Professor , Dept of Botany PSMO College, Thirurangadi
54	Steering Committee on CBCSS UG 2014	Dr.Joshy C.L, (Convenor) Dept.of Chemistry, St.Thomas College, Thrissur

Appendix Table V
LIST OF PARTICIPANTS IN WORKSHOP
REDESIGNING OF COURSES FOR OUTCOME BASED EDUCATION (OBE)
For Kannur University (BoS)
At Thavakkara Campus, Kannur University

No.	Name Participants	BoS
1	Dr.P.Abdul Rasheed	[Arabic]
2	Vidyalakshmi E.	[Bharthanatyam]
3	Dr.C.Sadasivan	[Biotechnology]
4	Dr.C.R.Lalitha	[Botany]
5	Saheed Vannathankandi	[Chemistry]
6	Pushpaletha P.	[Chemistry]
7	Babu P.V.	[Commerce]
8	Dr.Rajesh Kumar	[Commerce]
9	Thomas Scaria	[Computer Science]
10	Sajitha P.K.	[Economics]
11	Shibu P.	[Economics]
12	Anitha B.	[Education]
13	Dr.Sholy Joseph	[Education]
14	Dr.Rohit K.Raj	[Electronics]
15	C.Padmananbhan	[English]
16	Pramodkumar K.V.	[Englsih]
17	Aneesh K.S.	[Forestry]
18	N.M.Waheeda	[Functional English]
19	Dr.P.K.Vijayan	[Geography]
20	Abhilash T.K.	[Geography]
21	Gopinathan Nair A.	[Geology]
22	Dr.Vasanthi J.	[Hindi]
23	Dr.Preethi K.	[Hindi]
24	Dr.Joy Varkey	[History]
25	Usha C.K.	[History]
26	Dr.Muhammed Rafeeq T.	[Islamic History]
27	Vinayalal M.	[Journalism]
28	Dr. Radhakrishna N.Bellur	[Kannada]
29	Dr.M.P.Shanoj	[Malayalam]
30	N.Rajani	[Malayalam]
31	Dr.Bindu K.	[Management Studies]
32	Dr.C.P.Santhosh	[Mathematics]
33	Sirajudheen M.P.	[Mathematics]
34	Dr. K.Sreejith	[Microbiology]
35	Dr.Mini N.	[Music]
36	Praveena K.K.	[Phylosophy]
37	Sheela M.Joseph	[Physics]
38	Dr.Deepa K.	[Physics]
39	Dr.Joby Varghese	[Political Science]

No.	Name Participants	BoS
40	Sreekala V.P.	[Political Science]
41	Dr.S.Vinodkumar	[Psychology]
42	Dr.Anitha Kallyadan	[Sanskrit]
43	Johnson Simethy	[Social Work]
44	Dr.E.K.Munira Beebi	[Sociology]
45	Dr.K.Radhakrishnan Nair	[Statistics]
46	Dr.Dileep D.	[Travel and Tourism]
47	Dr.Swaran P.R.	[Zoology]
48	AbdulJaleel K.	[Zoology]

Appendix Table VI
LIST OF PARTICIPANTS IN WORKSHOP
REDESIGNING OF COURSES FOR OUTCOME BASED EDUCATION (OBE)
Thunchath Ezhuthachan Malayalam University
(TEMU), Tirur

No	Name	Subject
1	Dr. M. Sreenathan	Linguistics
2	Dr. C. Saidalavi	Linguistics
3	Dr. Smitha K. Nair	Linguistics
4	Dr. Santhosh M.	Linguistics
5	Dr. T. Anithakumary	Malayalam
6		Literature Studies
7	Dr. E. Radhakrishnan	Malayalam
8		Literature Studies
9	Dr. Roshniswapna P.	Malayalam
10		Literature Studies
11	Dr. Muhammed Rafi N.V.	Malayalam
12		Literature Studies
13	Dr. Anvar A.	Malayalam
14		Creative Writing
15	Dr. Ashok A. D'cruz	Malayalam
16		Creative Writing
17	Dr. C. Ganesh	Malayalam
18		Creative Writing
19	Dr. K.M. Bharathan	Malayalam
20		Cultural Heritage Studies
21	Dr. Suneetha T.V.	Malayalam
22		Cultural Heritage Studies
23	Dr. G. Sajina	Malayalam
24		Cultural Heritage Studies
25	Dr. K.V. Sasi	Malayalam
26		Cultural Heritage Studies
27	Dr. R. Rajeev Mohan	Journalism and Mass Communication
28	Smt. Ragini K.S.	Journalism and Mass Communication
29	Dr. Jainy Varghese	Environmental Studies
30	Dr. Dhanya R.	Environmental Studies
31	Smt. Sreeja V.	Development Studies
32		(Local Development)
33	Dr. A.P. Sreeraj	Development Studies
34		(Local Development)

No	Name	Subject
35	Dr. Manjusha Varma	History
36	Dr. Sreeja L.G.	History
37	Dr. P. Satheesh	History
38	Dr. K.S. Hakkim	Sociology
39	Dr. Swapnarani S.S.	Sociology
40	Dr. Vidya R.	Film Studies
41	Dr. Sudheer S. Salam	Film Studies
42	Sri. Anto P. Cheerotha	Journalism and Mass Communication
43	Dr. Sabna V.	Environmental Studies
44	Dr. Sheeba V.A.	Environmental Studies
45	Dr. Rajeevan Kunnath	Development Studies(Local Development)
46	Dr. Muhammed Shareef M.P.	Film Studies

Appendix Table VII
The List of Teachers participated in the Two day workshop on OBE at Maharaja's (Autonomous) College, Ernakulam, 11/3/19 & 12/3/19

1. Dr. Shyla M.H, Asst.Prof.of Zoology
2. Smt. Subida M.D, Asst. Prof.of Islamic History
3. Dr. Scintilla N.J, Asst.Prof.of Islamic History
4. Dr. Sheeba M, Asst. Prof.of Political Science
5. Dr. T.D. Beena, Asst.Prof.of Sanskrit
6. Sri. Navin Naik, Asst.Prof.of Sanskrit
7. Dr. Angel Mathew, Asst.Prof.of Statistics
8. Dr. Merlymole Joseph K, Asst.Prof.of Statistics
9. Sri. Robin Francis, Asst.Prof.of Physics
10. Dr. M. Gopikrishna, Asst.Prof.of Physics
11. Dr. V. J. Dann, Asst.Prof.of Physics
12. Dr. Lakshmi S, Asst.Prof.of English
13. Smt. Reena Nair, Asst.Prof.of English
14. Dr. Anitha M. N, Asst.Prof.of Commerce
15. Smt. Savitha M. A, Asst.Prof.of Commerce
16. Dr. Indu Velsar, Asst.Prof.of Hindi
17. Dr. A. K. Bindhu, Asst.Prof.of Hindi
18. Dr. Smitha T.M, Asst.Prof.of Philosophy
19. Dr. Rekha G. Menon, Asst.Prof.of Philosophy
20. Dr. Abdul Latheef Kozhipparamban, Asst.Prof.of Arabic
21. Sri. Hameed K.A, Asst.Prof.of Arabic
22. Sri. Abdul Rasheed K.S, Asst.Prof.of Arabic
23. Dr. Krishnakumar K, Asst.Prof.of Botany
24. Sri. Benoy Thomas M.P, Asst.Prof.of Botany
25. Smt. A.P.Sreekala, Asst.Prof.of Malayalam
26. Dr. E.S.Rasheed, Asst.Prof.of Malayalam
27. Dr. Jaya S, Asst.Prof.of Mathematics
28. Dr. Pramod P.K, Asst.Prof.of Mathematics
29. Dr. Pooja P. Balasundaram, Asst.Prof.of Music
30. Dr. Sindhu K.S, Asst.Prof.of Music
31. Sri. Omal Aloysius, Asst.Prof.of History
32. Dr. Suja N.R, Asst.Prof.of Chemistry
33. Dr. Amrutha S. Rajan, Asst.Prof.of Chemistry
34. Dr. Nishanthi P.U, Asst.Prof.of Economics
35. Dr. Anna Abraham Pachayil, Asst.Prof.of Economics
36. Dr. Sunish K.S., Asst.Prof.of Zoology
37. Smt Sharmila P S, Asst.Prof.of Zoology
38. Sri Priyesh C U, Asst.Prof.of Political Science

Observations

Dear Prof. Mohan,
Pro-Vice Chancellor, University of Calicut

It was pleasure interacting with you at the Workshop. As you stated the quality of learning of 3.4 Lakh students of your University is at stake in the design of curricula. I strongly urge you to have your programs designed in alignment with UGC framework. Please find enclosed a document I prepared for KSHEC on curriculum design of UG programs as per UGC guidelines. This document has to be particularized to your University. Many details and samples have to be appended. Please use this document as the starting point. The most important issues are

- Credit definition: There are considerable variations with regard to credit load. Our experience at the recent workshop clearly indicated Academic Council/Syndicate or no BOS is bothering to defining credit as per UGC norms. This, in my opinion, is a priority. Its definition and implementation should not be dictated by work load definition of the faculty.
- Credit Distribution: The present credit distribution deviates significantly from that of UGC. 38 credits allocated to Languages is unacceptable to all the discipline faculty of all programs. The comments from all the faculty of recent workshop indicate that they are very unhappy with the present credit distribution allocating so many credits to languages. Please note that UGC mentions only 2 compulsory credits of English/IML. While shifting from the present practice of 38 credits raises many faculty related issues, the present practice is very unfair to the students.
- Skill Enhancement Courses: The eight credits suggested by UGC for this category can greatly enhance the placement opportunities.

If I can be of any assistance to you in curriculum redesign, I will be happy to contribute.
My motivation is 3.4 lakhs of students of your University.

With regards
NJ Rao

Variances

Variances: Some major variances of Programs of Kerala Universities from UGC framework are
presented in the following.

Credit definition: Credit was defined nearly 120 years ago, and practically all institutions
across the world follow the same definition. Even after a major review around the year 2000 it
was agreed there is not anything better that can be considered in place of the present
definition of Credit. Credit is formally defined as (by UGC also)

One credit represents one lecture hour per week over a semester
One credit represents one tutorial hour per week over a semester
One credit represents two hours of laboratory/fieldwork per week over a semester

1. At present there is no correlation between the "number of credits" and the "number of lectures" in programs offered by Universities of Kerala. This discrepancy is possibly due to historical reasons. When this issue was raised with faculty, they claim it is linked to work load definition.
2. Credits for Languages: The number of credits allotted to English and Malayalam is up to 38 in a120 credit program. UGC specifies only 2 credits for English/IML which is very low. Faculty from all disciplines complain on the inadequacy of credits for the discipline of concern. 38 credits for languages is too large. While the number of credits for languages has to be considerably reduced, the reduction of credits raises the issue of faculty positions in Languages.
3. Workload of Faculty Members: There is an administrative understanding of what constitutes the workload of a faculty member. This has resulted in increasing the syllabi of many courses incompatible with the number of credits identified with the courses. It also led to two or even three faculty members teaching different parts of a course leading to no ownership of a course. All suggested changes to curricula are mainly evaluated in terms of workload and possible consequence of losing jobs.
4. Outcome Based Education: OBE shifts the entire education to be student centric and requires major changes to curriculum, assessment and instruction. All suggestions at present are considered and filtered strictly from the teachers' perspectives and their conveniences, and never from student centricity.
5. Number of Teaching Weeks: There is a perception as the number of official working days in a semester is 90, all the 18 weeks are taken to be teaching

weeks. This is not viable as 2 to 3 weeks will have to be used for conducting internal tests, end-semester examinations, sometimes preparatory holidays, and student activities in which faculty are heavily involved. The number of weeks that would be available for actual teaching will not be more than 15. The content of a course will have to be adjusted for this period.

6. Skill Enhancement Courses: The eight credits suggested by UGC for this category can greatly enhance the placement opportunities. Such courses are non-existent in the existing curricula. Many Universities elsewhere in India have already introduced such courses. While these are some of the main issues, there are many other issues that have influence on the quality of learning of students. These include all aspects of assessment, instruction, faculty training, use of technology, the fraction of time spent on research, and situatedness of the institution as required by NAAC.

KSHEC should address these issues along with all the Universities of Kerala after collecting state wide data. Even a partial solution to these issues will go a long way in improving the quality of learning of students across the state.

Programme Specific Outcomes (PSOs)

Program Specific Outcomes (PSOs) are statements of what the graduates of a specific general
program are expected to be able to do in addition to Program Outcomes. These are two to four in
number and must be arrived at by the committee specially constituted following a well-defined
process.

Some sample PSOs

BA (Sociology)

PSO1 Analyze the social structures and processes that create and interpret social relations
PSO2 Understand the trends in tribal, rural and urban cosmopolitan societies
PSO3 Examine the positivist, classical, functional, conflict, interactionist, exchange and post-
modern frameworks in the context of current socio-political conditions.
PSO4 Plan an empirical research program on a social problem/issue /situation after analyzing it
using research tools and methods

BSc (Geology)

PSO1 Understand evolution of land and earth processes
PSO2 Identify minerals and rocks and their mode of origin
PSO3 Understand geologic history based on principles of stratigraphy, paleontology and geochemistry
PSO4 Understand the impact of mining and geological disasters

B.A. (Malayalam)

PSO1: മലയാള ഭാഷ, സാഹിത്യം എന്നിവയുടെ സാമാന്യജ്ഞാനം
PSO2: വ്യത്യസ്ത സാഹിത്യ പ്രസ്ഥാനങ്ങളെയും കലാ പ്രസ്ഥാനങ്ങളെയും ചരിത്രപരം കാലികം എന്നിവയുടെ അടിസ്ഥാനത്തിൽ മനസ്സിലാക്കുക
PSO3: കേരള ചരിത്രം സംസ്കാരം പരിസ്ഥിതി ഗാനം സാഹിത്യം സാഹിത്യനിരൂപണം എന്നിവയെ ആഴത്തിൽ അപഗ്രഥിക്കുക
PSO4: കലാ-സാഹിത്യ വിഭാഗങ്ങളുടെ ആസ്വാദനം, സർഗാത്മക രചനയുടെ പരിശീലനം

B.A. (Communication Studies)

PSO 1 Understand the structure of language and develop the ability of the students to apply it in LSRW.
PSO 2 Identify the genres of literature and understand its significance in the contemporary world
PSO 3 Understand the concept of media from print to online and explore the aspects of advertising, public relations, film to have a deep understanding about the subject.
PSO 4 Carry out media exercises like newspaper, Radio, TV, Cinema production and internships which provide practical exposure and help students to be better placed while searching for media related jobs.

B.Sc. (Zoology)

PSO1 Understand the nature and fundamental concepts in immunology, microbiology, genetics, biotechnology, cell and molecular biology, embryology, ethology, ecology and zoogeography
PSO2 Understand animal diversity through the taxonomy, systematic classification and evolution and their relative role in the sustainability of the environment
PSO3 Perform laboratory procedures in the areas of cell and molecular biology, physiology, biochemistry, molecular biology, immunology and bioinformatics
PSO4 Implement the techniques of biological sciences in aquaculture, sericulture, apiculture, poultry, piggery, rabbit farming, dairying and vermiculture for the economic prosperity of the country.

B.A. (Hindi)

PSO1 Understand Hindi language, literary theories, poeties, prosody, criticisms; familiarize style of language, its developments and structure of Hindi language.
PSO2 Analyse the origin and development of Hindi literature, different trends, great poets and their thoughts and specify Hindi drama, novel, story, fiction, sketch, report etc.
PSO3 Understand the origin and development of Hindi literature, different trends, great poets and their thoughts and specify Hindi drama, novel, story, fiction,sketch,report etc.
PSO4 Evaluate the Hindi writers and their philosophical visions related to social problems, their themes, thoughts etc. and estimate the recent trends of writings.

B.Sc. Chemistry

PSO1 Understand the fundamental concepts of organic, inorganic, and physical chemistry and apply the knowledge in the qualitative and quantitative analysis of chemical compounds
PSO2 Understanding the concepts in chemistry and its application in everyday life
PSO3 Understand laboratory techniques, principles, procedures and concepts of different branches of chemistry
PSO4 Understand and implement chemical concepts in sustainable development and green chemistry

B.Sc. Complementary Botany

PSO1 Understand the plant diversity and relationships among primitive and advanced group of plants.
PSO2 Explore the nature and fundamental concepts in genetics, plant breeding, horticulture and biotechnology.
PSO3 Perform laboratory procedures as per standard methods in biology.
PSO4 Awareness related to environment - Ecosystem, plant succession and ecological groups.

B.Sc. Geography

PSO1. Understand the nature and concepts of geomorphology, climatology, oceanography and biogeography.
PSO2. Understand the role of geoinformatics in geography and mapping.
PSO3. Understand the role of Indian physiography on the distribution of climate, vegetation and population.
PSO4. Understand the future of agriculture in the context of climate change.

B.Sc. Forestry

PSO1. Understand the basic concepts in forestry and wildlife.
PSO2. Understand and practice silvicultural techniques, nursery technology and the utilization of forest products.
PSO3. Understand the legislative measures and conservation practices applied in the management of Forests.
PSO4. Understand the application of Remote sensing, GIS, Surveying, Statistics and Economics in the field of forestry.

B.Sc. Biochemistry

PSO1. Understand the life processes of organisms and properties of cells and its contents
PSO2. Understand the biological synthesis, structure and function of biological macromolecules and biological reaction pathways.
PSO3. Understand the methods of modification of biological molecules and large scale production of useful products by making use of cell/tissue culture, microbes, plants and animals.
PSO4. Perform laboratory experiments that help to understand the biological processes, the production, isolation and characterization of biological macromolecules.

B.A. History

PSO1 Understand the concept of Medieval India.
PSO2 Familirize major themes of Modern Western World.
PSO3 Identify modern trends in Historiography.
PSO4 Describe major events in Indian National Movement.

PSO1 understanding the historical writings by exploring new facts
PSO2 Formulating the idea of comparative study among the local, national and world historical phenomenon

PSO3 Building the idea of critical thinking to the students in the field of historical study
PSO4 Designing the basic historical traditions of Kerala, India and World

B.A. Economics

PSO1. Understand the basic concepts in Economics
PSO2. Understand the characteristics of Indian and World economy
PSO3. Analyze macro-economic policies in India
PSO4. Determine economic variables GDP, inflation, BOP, Poverty using statistical and econometric tools

B.Sc. Mathematics

PSO1 Understand the basic concepts and tools of Mathematical logic,methods of proofs, set theory, geometry, abstract structures and algebra.
PSO2 Solve problems in analysis, calculus and number theory.
PSO3 Model real world problems into Mathematics problems and find solutions and understand the application of Mathematics in other sciences and engineering.
PSO4 Develop programming, computational and typesetting skills and implement them practically.

PSO 1 Learn to demonstrate basic skills in algebra, geometry, Analysis and basic calculus.
PSO 2 Apply mathematical methods and ideas both in maths related and non related areas.
PSO 3 Develop the analytic and problem solving skills
PSO 4 Understand the relations between different concepts and branches of mathematics and to connect with real life phenomena.

B.A. Sanskrit

PSO1 Understand the basic structure of Sanskrit grammar. Dates ,Epics, myths and arguments will be critically evaluated.
PSO2 Understand the Ancient skt literature poetry, prose, Drama, History- Styles, Peculiarities
PSO3 Analyse the Relevance of Sanskrit Subhashitas and Dharmasastra in modern society.
PSO4 Understand the Comparison of Ancient Sanskrit Literature And modern Literature-Introducing ancient and Modern Authors, performing Arts.

B.Sc. Computer Science

PSO1 Develop application software system including database, and web based applications for the given requirements and ability to understand the hardware and software aspects of computer systems.
PSO2 Implement standard software engineering practices and strategies in software project development using open source programming environment to deliver a quality product.
PSO3 Design and develop latest technologies of Web Designing, IOT, Python,C# and .Net, Cloud computing and JAVA. Ability to apply mathematical methodologies to solve computational task, model real world problem using appropriate data structure and algorithm.

PSO4 Apply the modern computer languages, environments and platforms for creating innovative startups.

B.Com.

PSO1 Understand methodology of learning commerce, entrepreneurship and management.
PSO2 Understand the basic concepts and applicability in accounting and finance and acquire complementary skills in the practice of the same.
PSO3 Understand the legal and applicational aspects of taxation and the management theron including GST.
PSO4 Understand and develop theoretical and practical Skills in banking and financial services.

PSO1 Understand Latest Developments In Accounting Field
PSO2 Understand Research Methods And Techniques .Apply Research Methods In Commerce Related Fields
PSO3 Understand Managerial Skill In Decision Making .Apply Decision Making Skills In Finance And Business
PSO4 Understand Basic Concept Of Direct And Indirect Tax .Apply Return Filing In Personal And Business Income

B.Sc. Botany

PSO1 Understand the plant diversity from prokaryotic unicellular to eukaryotic multicellular highly evolved angiosperms
PSO2 Identify different plant forms based on their gross morphology and anatomy
PSO3 Develop skill in taking hand sections of different plants
PSO4 Culture different plant parts in culture medium

PSO1 Understand the plant diversity and relationships among primitive and advanced group of plants.
PSO2 Explore the nature and fundamental concepts in genetics, plant breeding, horticulture and biotechnology.
PSO3 Perform laboratory procedures as per standard methods in biology.
PSO4 Awareness related to environment - Ecosystem, plant succession and ecological groups

B.Sc. Psychology

PSO1 Discuss major psychological concepts, theoretical perspectives, and empirical findings in Psychology and relate them to understand the self and others.
PSO2 Articulate proficiency in psychological testing, research methods and fundamental statistical methods as well as linguistic competence in the learner.
PSO3 Understand the significance of the biological basis of behaviour and human development and its relevance in Psychological principles.
PSO4 Combine psychological principles to integrate civic and environmental consciousness in professional and personal experiences.

PSO5 Analyse the maladaptive behaviour in individuals and to plan certain methods of psychological wavelength so as to fine tune behaviour patterns of individuals in multiple settings.

Course Outcomes (COs)

Paper: Descriptive Statistics

CO1 Explain the methods of collection, presentation, analysis and graphical representation of data
CO2 Compare the different measures of central Tendency and Dispersion.
CO3 Distinguish between Skewness and Kurtosis.
CO4 Illustrate Correlation Analysis and Regression Analysis
CO5 Apply the principle of least squares in fitting straight lines, parabola and power curves

Paper: Foundations of Psychology

CO1: Understand the basic concepts in Psychology.
CO2: Understand the scientific terminologies in Psychology.
CO3: Develop the capacity to follow as well as comprehend advanced theories in the field.
CO4: Understand the different methods in Psychology
CO5: Understand the historical aspects of Psychology.
CO6: Evaluate the importance of sensation, attention and perception in daily life
CO7: Understand the major aspects of consciousness
CO8: Design an experimental study with control group

Paper: Polymer Chemistry I

CO1 : Identify condensation polymer, addition polymer, carothers equation , thermosetting and thermo plastics
CO2: Define initiator, ceiling temperature, polymer degradation, photostabilisers
CO3: Explain Flory Huggins theory, theta solvent, gel point CO4: Determine weight average molecular weight, number average molecular weight, polydispersity index
CO5: Derive the rate equation for coordination polymerisation, ionic and condensation polymerisations
CO6: Discuss the mechanisms of Zeigler Natta Polymerisation, Free radical polymerisation and ionic polymerisation

Paper: Introduction to Political Science

CO1: Understand elementary knowledge about the meaning, origin, growth, importance & scope of Political science
CO2: Understand the important Political ideologies & major concepts liberalism, Marxism, Gandhism, & Democracy.
CO3: Understand Behavioural & Post-Behavioural approaches in the study of Political Science

CO4: Compare the functioning of Political System exists in U S A , U K, & India
CO5: Understand the relationship of Political science with History, Economics, Sociology, Psychology & Geography

Paper: Basic Mechanics and Properties of Matter

CO1: Understand the equation of motion related to the rotation of different regular shaped rigid bodies and their moments of inertia about different axes.
CO2: Understand simple harmonic motion by the static force analysis of simple pendulum and compound pendulum and extend the concept to general mechanical waves & electromagnetic waves.
CO3: Understand elastic properties of materials, surface tension of fluids and fluid dynamics

Paper: Biophysics

CO1 Understand the concept of surface tension, diffusion, adsorption, osmosis and dialysis and their application to biological system.
CO2 Understand the concept of enthalpy, entropy and free energy
CO3 Understand the concept of chemical kinetics
CO4 Understand structure and bioelectric properties of cell membranes
CO5 Understand conformation of sugar conjugates of protein and lipids
CO6 Understand duplex, triplex and quadruplex structure of DNA, supercoiling of DNA and structure of t-RNA
CO7 Understand primary, secondary, tertiary and quaternary structure of globular proteins
CO8 Understand protein-nucleic acid interactions and structure of ribozymes

Paper: Computer Networks

CO1 Design and implement new network topologies.
CO2 Analyze and choose appropriate routing algorithm.
CO3 Introduce a network protocol.
CO4 Examine the bandwidth and ip address of network connection.
CO5 Identify the errors occurred in network connection.
CO6 Select properly configured systems.

Paper: Reading Poetry

CO1: Define the forms and types of poetry
CO2: Explain the diverse poetic devices and strategies employed by poets
CO3: Discuss the historical background of the poets
CO4: Identify the figures of speech in the poems prescribed CO5: Develop the level of literary and aesthetic experience CO6: Determine the various characteristics of the different schools of poetry
CO7: Analyze poems critically with the skills gained from the critical analysis of poems of study

Paper: Statistical Methods in Economics

CO1: Calculate Measures of Central Tendency and Dispersion.

CO2: Describe and Analyse Statistical Data
CO3: Interpret Correlation and Regression
CO4: Apply Probability Distributions to Various Economic Problems.
CO5: Demonstrate the Trend of Economic Variables over Time

Paper: Cloud Computing

CO1 Understand the different architecture of Cloud Computing.
CO2 Understand the cloud application in industries-Amazon,Microsoft Azure,Google AppEngine .
CO3 Understand the economy of cloud computing and its open challenges.
CO4 Understand Scientific application of cloud computing.
CO5 Understand the underlying principle of cloud virtualization, cloud storage, data management and data visualization.
CO6 Explain the core issues of cloud computing such as security, privacy, and interoperability.
CO7 Explain the main concepts, key technologies, strengths, and limitations of cloud computing.
CO8 Analyze the Cloud computing setup with it's vulnerabilities and applications using different architectures.

Paper: Fundamentals of Income Tax

CO1 Understand the basic concepts of income tax
CO2 Determine the residential status of an individual, HUF, Company and AOP/BOI.
CO3 Compute the income from salary of an individual
CO4 Compute the income from house property of an individual.
CO5 Compute profits and gains of business or profession.
CO6 Compute the income from capital gains of an individual.
CO7 Prepare the statement showing computation of income from other sources of an individual.
CO8 Describe the rules applicable in clubbing and aggregation of income.

Paper: Ecotourism

CO1 Understand the history, forms and categories of Tourism
CO2 Understand the Objectives and principles of Ecotourism
CO3 Understand the forms of Ecotourism
CO4 Evaluate the ecotourism in protected areas of Kerala
CO5 Determination of Carrying Capacity in ecotourism sites
CO6 Explain the role of stakeholders in Ecotourism
CO7 List out the guidelines for a sustainable ecotourism
CO8 Create an ecotourism marketing plan
CO9 Determine the value of an ecotourism site.

Paper: Organic Chemistry I

CO1 State asymmetry and dissymmetry
CO2 Understand the basic concepts of the structure of organic molecule.
CO3 Determine IUPAC name of organic molecules

CO4 Compare unimolecular and bimolecular nucleophilic substitution reactions
CO5 Analyze conformational and configurational structures of organic compounds
CO6 Apply Hoffmann rule and saytzeffs rules
CO7 Explain electron displacement effects
CO8 Identify the absolute and relative configurations of organic molecules.

Paper: Discrete Mathematics

CO1 Understand the basic concepts of Graph theory .
CO2 Develop models for real life situations using GraphTheory .
CO3 Understand the concepts of trees and tree traversal
CO4 Apply tree traversal to Data Structure .
CO5 Make use of Tree traversal algorithms in logical expressions.
CO6 Construct Boolean functions and logic gates.
CO7 Analyse and simplify digital logic circuits by using boolean algebra
CO8 Understand different types of matrix .
CO9 Find ranks by different methods and find solutions of linear equations.
CO 10 Solve matrix problems

Paper: Mathematics I

CO 1 Understand the basics of theory of numbers.
CO 2 Understand the basics of Number system
CO 3 Understand the basics of Exponents and Powers
CO 4 Understand the basics of Commercial Arithmetics.

Paper: Mathematics II

CO 1 To understand the importance of Commercial Arithmetic
CO 2 To understand the importance of Ratio and proportion
CO 3 To understand the idea about Simple and compound interest
CO 4 To understand the idea of 3D shapes
CO 5 To understand the importance of Quadratic equations

Paper: Malayalam I

CO1 | കഥകൾ ആധുനികവുംആധുനികാനതരവും പഠിക്കുന്നതിലൂടെ കാലഘട്ടനുസൃതമായി മനസ്സിലാക്കാൻ കഴിയും. മാറ്റങ്ങൾ. രചനാരീതിയുടെവ്യതിയാനങ്ങൾ മനസ്സിലാക്കാൻ കഴിയും
CO2 | കവിതകളുടെ രചനാരീതിയലും ആവിഷ്കാരരീതിയിലും വന്ന വ്യതിയനങ്ങൾ മനസ്സിലാക്കുക.
CO3 | നാടകം എന്ന കലാരൂപത്തിൻറ സാധ്യതകൾ. ആധുനിക കാലഘട്ടത്തിൽ പരിതോവസ്ഥകളുമായി സംവദിക്കുവാൻ പഠിപ്പിക്കുക
CO4 | ഗദ്യരചന പരിശീലനം. ചിന്തയുടെ വൈവിധ്യമാർന്ന രൂപങ്ങൾ പരിചയപ്പെടുത്തുക.
CO5 | ഹിമാലയത്തിലെ യാത്രാനുഭവങ്ങൾ. ഭാരത സംസ്കാരത്തിനും ചരിത്രത്തിനു ഇന്നുള്ള പ്രാധാന്യം.

CO6 | വിദ്യർത്ഥികളിൽ മൂല്യബോധം നൽകുക. മൂല്യശോഷണവും മൂല്യതകർച്ചയുടെ ദുരന്തമുഖം വ്യകതമാകുക.
CO7 | ജീവിതാനുഭവങ്ങൾ ആനുകാലിക പ്രശ്നങ്ങൾ ഇവ ചർച്ച ചെയ്തു പഠനവിഷയുമായി ബന്ധപ്പെടുത്തുക
CO8 | സാഹിത്യ കൃതികൾ വായിച്ചു മനസ്സിലാക്കാൻ പരിശീലനം. ജീവിതാവബോധം നൽകുക.

Paper: Fundamental Writing Skill

CO1 Draft informal formal letters, CV, and resume
CO2 Write texts for given concepts and specified needs.
CO3 Create ads and brochures for given products and programs.
CO4 Prepare reports based on given news.
CO5 Describe the characteristics of things, animals, people and events and processes
CO6 Perform evaluation, summarization and paraphrasing.
CO7 Prepare notice, agenda, and minutes of a meeting.
CO8 Edit and proofread texts

Paper: Kerala Economy

CO1 Understand the Kerala Development experience
CO2 Evaluate the performance of Agriculture
CO3 Analyze the industrial contribution
CO4 Create a new industrial path
CO5 Understand the demographic profile
CO6 Analyze rebuilding initiatives of flood 2018
CO7 Understand decentralised planning
CO8 Evaluate performance of local Government

Paper: Law and Practices

CO1 Understand the basic concepts of Income tax
CO2 Compute the income from salary and house property
CO3 Develop the knowledge to determine taxable profit of a business or profession
CO4 Make use of the theoretical Knowledge of Capital gain and income from other sources
CO5 Apply the knowledge of gross total income of an individual
CO6 Understand the inter heads and intra head set off and carry forward of loss.
CO7 Understand the Rebate and Relief and Computation of agricultural income
CO8 Determine eligible deductions and compute taxable income and tax liability of an individual.

Paper: MOLECULAR BIOLOGY, GENERAL INFORMATICS & BIOINFORMATICS

CO1 | Understand DNA and RNA as genetic material, types properties and replication mechanisms.
CO2 | Understand transcription and translation as steps of protein synthesis in plants
CO3 | Understand how genes are regulated and controlled in organisms.
CO4 | Understand the use of computer in biological data analysis
CO5 | Develop safe usage of internet by learning cyber laws and cyber ethics
CO6 | Understand the use of bioinformatic tools.
CO7 | Understand molecular phylogeny
CO8 | Familiarize ethics to be followed in scientific research

Paper: Linear Algebra

CO1 | Understand the concepts of linear equations and their geometry.
CO2 | Understand the idea of vector spaces and linear transformations by illustrating many examples.
CO3 | Develop the idea of determinants stronger, study its properties and their applications in solving system of linear equations, computing the inverse and finding volume.
CO4 | Explain the problem of finding eigen- values of a matrix, diagonalization of a matrix, and the use of eigen vectors in diagonalization
CO5 | Employ methods related to the above concepts in solving practical problems.
CO6 | Classify matrices as Symmetric, Hermitian, Orthogonal and study the diagonalization of these special matrices.

Paper: Art and Literary Aesthetics

CO1 | Understand the movements in the history of art and literature.
CO2 | Understand the works of art that directly refer to literary works and vice versa.
CO3 | Develop a comparative study of paintings, films and literary works which are representatives of specific art movements.
CO4 | Discuss the relation of performing arts and music to literature.
CO5 | Interpret music as text and the way in which this is manifested.
CO6 | Examine how all forms of art is part of a continuum

Paper: Art and Literary Aesthetics

CO1: Define the concept of post colonialism and its implications on the socio-political and cultural affairs of the contemporary world.
CO2: Identify significant thoughts and issues mentioned in the literary works, so as to gain insights on the post-colonial era.
CO3: Determine the complexities involved in the thematic content of the post-colonial writings prescribed for study.
CO4: State the extend of racial subjugation and subsequent trauma as portrayed in post- colonial literature
CO5: Select emergent writings on the discourse for further research.

Paper: Post-Colonial Literatures in English

CO1 | Understand the movements in the history of art and literature.
CO2 | Understand the works of art that directly refer to literary works and vice versa.
CO3 | Develop a comparative study of paintings, films and literary works which are representatives of specific art movements.
CO4 | Discuss the relation of performing arts and music to literature.
CO5 | Interpret music as text and the way in which this is manifested.
CO6 | Examine how all forms of art is part of a continuum

Paper: History of English Literature

CO1 | Identify the different ages in English literature and the literary trends specific to each age
CO2 | Identify the major writers and their seminal works
CO3 | Explain the impact that the social and political history of England had on literature
CO4 | Explain how the varying trends in art and culture found its reflection in literature

CO5 | Focus on different literary movements and its impact in varying degrees in poetry, prose and drama
CO6 | Connect literature to the historical developments that shaped the English society

Paper: Innovative Library and Information services
CO1 | Explain the basic concepts of Library and Information Services
CO2 | Identify the innovative technologies in the field of Library and Information Domain
CO3 | Show competency in the use of Information Technology components in library services
CO4 | Acquire skill in the use of Information technology in the library products and services
CO5 | Explain the working of information technology enabled services for different category of users
CO6 | Design and evaluate an information technology enabled library services

Paper: Conservation Biology
CO1 | Understand the importance and introduction of Biodiversity
CO2 | Understand the scope, nature and conservation of Biodiversity
CO3 | Explain major factors that deplete our Biodiversity
CO4 | Identify what are the methods to conserve Biodiversity
CO5 | Understand the different conservation strategies to different organisms.
CO6 | Explain the effects of biodiversity depletion to all the organisms
CO7 | Explain different laws and Environmental protection Act.
CO8 | Understand different environmental hazards by the depletion of Biodiversity and what are the importance of conservation of Biodiversity.

Paper: Structural Geology & Geotectonics
CO1 | Understand the importance and introduction of Biodiversity
CO1 | Apply the principles of Geological compass, geological maps, Stereographic projection in in determining dip and strike of beds/ geological structures in structural geology.
CO2 | Understand the geometry and classification of folds and their recognition in the field and map.
CO3 | Understand the definition, terminology, classification, mechanism of faulting and criteria for the recognition of fault in the field and map.
CO4 | Understand foliation and lineation in the field.
CO5 | Understand joints in rocks and their origin, classification and geological significance.
CO6 | Identify the unconformities, their types and identification in field and map.
CO7 | Understand the Stages of rock deformation and factors controlling rock deformation.
CO8 | Understand the concept of plate tectonics, types and characteristics of plate margins, Causes of plate movements and orogeny in relation to plate tectonics.
CO9 | Understand the origin and classification of mountains and the concept of isostasy

Paper: Pros & Grammer
CO1 | Understand the importance and introduction of Biodiversity
CO1 | Understand the Subhashitha {word of the great personalities} is capable of knowing the experience of learned personalities.
CO2 | Understand Subhashitha it is preventing from evil deeds.
CO3 | Understand different types and styles of poetry.
CO4 | Understand the heroic and deeds of great personality and types of figures of speech and meters.

CO5 | Understand the meters of different nature. Apply the metric rules to poem of such meters.
CO6 | Understand the sound, refresh and apply their vocabulary.

Paper: Organic Chemistry I

CO1 | Understand the basic concepts in organic chemistry, such as IUPAC nomenclature, electronic displacements, bond cleavages, reactive intermediates, types of reagents and organic reactions, etc.
CO2 | Understand the stereochemistry and conformations and apply the concept to determine the configuration of organic compounds
CO3 | Explain the concept of aliphatic hydrocarbons and alkyl halides
CO4 | Describe the concept of aromaticity
CO5 | Understand different concerted reactions
CO6 | Explain aromatic hydrocarbons and aryl halides
CO7 | Understand organometallic compounds
CO8 | Understand the mechanisms of pericyclic reactions

Paper: Environmental Studies and Human Rights

CO1 Identify human relation with the environment.
CO2 State core concepts and methods from ecological and physical sciences and their application in environmental problem solving.
CO3 Identify concepts and methods from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
CO4 Determine the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
CO5 Identify environmental problems and ways of addressing them.
CO6 Understand the physical, chemical, and biological components of the earth's systems and show how they function.
CO7 Develop a better sense of natural systems and human-designed systems work together, as well as in conflict with each other.
CO8 Understand their roles, identities and rights as citizens and consumers in an interconnected world.

Paper: Theories of Ethics

CO1 Understand the scope of Ethics with reference to psychological basis of morality..
CO2 Understand the nature of willed actions, character and conduct.
CO3 Understand the ethical theories of Immanuel Kant and J.S Mill.
CO4 Analyse the theory of hedonism and theory of utilitarianism.
CO5 Determine the ethical values involved in the individuals and those existing in the society.
CO6 Analysis of the ethical theories and their influence in transforming the society.
CO7 Evaluate the relation of ethics to psychology, sociology and religion.
CO8 Explain the similarities in the ethical theories of J.S.Mill and Bentham.

Paper: കേരള സംസ്കാരം - പൂർവ്വഘട്ടം

CO1 കേരളം എന്ന സാംസ്കാരിക പരിസരം - സാംസ്കാരിക പ്രക്രിയകൾ - സമൂഹ രൂപീകരണം പരിണാമം തുടങ്ങിയവയുടെ സാമാന്യമായ ധാരണ - കേരള സംസ്കാരത്തെ പരിചയപ്പെടുത്തുക.
CO2 പ്രാചീന തമിഴകം - ഗോത്ര സംസ്കൃതി, തിണകൾ തുടങ്ങി കേരളം എന്ന സാംസ്കാരിക മേഖലയുടെ പരിചയപ്പെടൽ.

CO3 പ്രാചീന തമിഴകത്തിൽ നിന്നും ആര്യാഗമനത്തിലേക്കുള്ള വഴികൾ -കാരണങ്ങൾ, ക്ഷേത്ര കേന്ദ്രിത സമൂഹങ്ങൾ - ഭക്തി പ്രസ്ഥാനം -ക്ഷേത്ര കലകൾ - കേരളീയ വൈജ്ഞാനികതയുടെ രൂപപ്പെടൽ എന്നിവയെക്കുറിച്ചുള്ള അന്വേഷണം
CO4 മധ്യകാല സമൂഹത്തിന്റെ രൂപപ്പെടൽ - ഭാഷാപരിണാമത്തിന്റെ അടിത്തറ - വിശകലനം
CO5 എഴുത്തച്ഛൻ, ഭാഷാ , സാഹിത്യമേഖലകൾ - കേരളത്തിന്റെ സാംസ്കാരിക രൂപപ്പെടലിന്റെ വളർച്ച വിശകലനം
CO6 പാശ്ചാത്യ അധിനിവേശങ്ങൾ - ചെറുത്തു നില്പ് - സംഭാവനകൾ വിശദമായ വിലയിരുത്തൽ

Paper: READING AND WRITING ENGLISH – BASICS

CO1 | Understand the different parts of speech in English.
CO2 | Apply the various parts of speech in English appropriately.
CO3 | Understand and apply the specific and appropriate use of different tenses in English.
CO4 | Understand and create different types of compositions in English.
CO5 | Comprehend and compose passages effectively in English

Paper: Communicative English II

CO1: Identify the four types of sentences and construct simple sentences
CO2: Apply question words and question format
CO3: Describe pictures and construct short paragraphs.
CO4: Understand sentence patterns and construct sentences.
CO5: Understand the use of adverbs in sentences.
CO6: Construct sentences in perfect and perfect continuous verb forms
CO7: Apply correlative conjunctions in writings
CO8: Understand the use of prepositions
CO9: Change the voice of the sentences from active to passive
CO10: Apply the elements of a letter to compose formal and informal letters.
CO 11: Understand and infer prose lessons

Paper: B.A. Hindi (Course: Film History & Production)

CO1 Understand the history of Indian film with special reference to Malayalam, Hindi &Tamil films.
CO2 Understanding the genius directors, actors, of Malayalam, Tamil and Hindi film history.
CO3 Understand the processing of film production like screenplay, photography, editing etc.
CO4 Analyse the best techniques in photography and editing in films.
CO5 Understand the aspects involved inWorld film and Indian films.
CO6 Analysis of Society and conversion of its situations into cinema and vice-versa.
CO7 Understand the relation between women empowerment / women's social problems and Cinema.
CO8 Evaluate the knowledge of important personalities in indian music industry, namely Lata Mangeshkar & A.R Rahman.

Questions Framed-Cognitive Levels

B.A. Malayalam

Remember	നവോത്ഥാനകാല നിരൂപകരെ പരിചയപ്പെടുത്തുക
Understand	നവോത്ഥാനകാല നിരൂപണം കുറിപ്പ് എഴുതുക
Apply	മുണ്ടശ്ശേരിയുടെ നിരൂപണ സംഭാവനകൾ ക്രോഡീകരിക്കുക
Analyze	നവോത്ഥാന നിരൂപണ പദ്ധതികൾ വിശകലനം ചെയ്യുക
Evaluate	വിമർശനബുദ്ധ്യാ വിശകലനം ചെയ്യുക
Create	ചിന്താവിഷ്ടയായ സീതയെ സമകാലിക സ്ത്രീ പ്രശ്നങ്ങളുടെ
	പശ്ചാത്തലത്തിൽ നിരൂപണം ചെയ്യുക

B.Sc. Physics

Remember	What is a transistor?
Understand	Explain the working of a npn transistor.
Apply	Sketch the diagram of potential divider biasing in transistors and find the equation for current amplification factor
Analyze	Compare the output current (Ic) given by different types of biasing methods used in transistors
Evaluate	“Potential divider biasing is the commonly used method for transistor biasing”, Justify the statement.
Create	Design a base resistor biasing circuit having amplification factor 100

B.Sc. Mathematics

Remember	Define Holders inequality
Understand	Verify Minkowski’s inequality for l2 space
Apply	Show that d(x,y)=|x-y| is a metric in R2 and space is a metric space
Analyze	For 1p Show that the metric space lp is separable , but l is not separable
Evaluate	Find $\|\|x\|\|3$,where x=(12,34,2)R3
Create	Construct a normed basis for R4 using Orthogonalization process choosing any basis other than standard basis

B.A. Hindi

Remember	सकुबाई कैसी औरत है ?
Understand	वासंती का चरित्र चित्रण कीजिये ?
Apply	सकुबई समाज की मद्यावर्गीय स्थ्रीयोन का प्रतीक है ?व्यक्त कीजिये ?
Analyze	सकुबाई नाटक का उद्देश्य क्या है ?

Evaluate	सकुबई मद्यावर्गीय घरेलू कामकाजी नारियों का प्रतीक है ?व्यक्त कीजिये ?
Create	सकुबाई के चरित्र के मादयम से समाज के मद्यावर्गीय स्त्रीयों का चित्रा खींचिए ?

B.Sc. Statistics

Remember	What is critical value ?
Understand	What you mean by Z statistic?
Apply	Find the probability of typeI error in the given problem
Analyze	find the table value of Z using area under the normal curve
Evaluate	Test equality of two population means when SD is known in the given problem
Create	Give an example for type II error is more serious than type I error

B.A. Arabic

Remember	من هو الملك الضليل؟
Understand	من الذي يعرف بشاعر النيل؟
Apply	اكتب عن مساهمات طه حسين في مجال تاريخ الحياة في الأدب العربي؟
Analyze	تأثير القرآن في كتابة المسرحيات في مؤلفات توفيق الحكيم؟
Evaluate	لم يعرف العصر قبل بعثة الرسول بعصر الجاهلي ؟
Create	أكتب عن عناصر العشق في أبيات امرئ القيس؟

B.Sc. Zoology

Remember	What is a green gland ?
Understand	Distinguish between uropod and pereopod
Apply	Give an account of the mouth parts of prawn
Analyze	Analyse the importance of antennule of penaeus
Evaluate	What is the significance of compound eyes of prawn
Create	Production of an enormous number of eggs as in the case of prawn is an invertebrate adaptation. Justify your answer

B.A. Sanskrit

Remember	Name any two Sanskrit poets
Understand	Write the first sloka of " KumaraSambhava"
Apply	Split the word "Asthyutharasyam "
Analyze	Write down the difference between " Upama" and "Utpreksha"
Evaluate	Evaluate the " Anustup" metre through the given verses
Create	Criticise the dramatic styles of Kalidasa and Bhasa

B.A. Hindi

Remember	● What are the two major types of shooting? ● What is the english word for Chhayankan?
Understand	● How many steps are there in the shooting process? Briefly explain about them. ● What are the various conditions to provide censorship to a film?
Apply	● If you are about to make/create a short film or documentary, what will be your operating procedure? ● Explain the operating procedure to make a short film or documentary?
Analyze	| ● Which method of sound recording is the most convenient method for the recordist? ● How the lighting arrangements can affect a scene in film. ● Analyze the importance of lighting arrangements in a film scene
Evaluate	● Evaluate the usefulness of technical applications in cinema. ● Technical applications are very useful is a cinema, evaluate this comment
Create	● Based on the story given below for a film, how will you write a script? ● Write the script based on the story of the film (Link attached)? ● Activity (Group of 10 students)- Write a short story then write the script based on this story and shoot the short film. Duration of the short film should be 2 to 4 minutes

B.A. History

Remember	List the different types of research
Understand	Explain the stages included in the selection of a problem
Apply	Design a synopsis based on the selected problem
Analyze	Examine a methodological design for the selected problem
Evaluate	Discuss the hypothesis formulated for the research problem
Create	Frame a research report on a specific problem

B.A. History

Remember	What is management accounting?
Understand	Explain Features of management accounting
Apply	Explain any 2 use of management accounting in real life with example
Analyze	Critically analyses the limitation of financial accounting
Evaluate	Evaluate the financial performance of 2 companies by using balance sheet of five years
Create	Create a accounting model to solve fund creating problems in a baking industry.

B.Sc. Chemistry

Remember	State the general formula of carbohydrate
Understand	Differentiate reducing and non-reducing sugars
Apply	Apply the concept of condensation reaction to construct any heterocyclic ring
Analyze	Analyze the methods adopted for the synthesis of epoxides
Evaluate	Judge the greenness of the reactions for the synthesis of olefins
Create	Propose a mechanism for the conversion of glucose to fructose

More resources are available at:

Course Outcomes:

- https://padlet.com/manulalgeo/course-outcomes-lf9o2l2ya2tgmmzo

Assessment Questions-Cognitive levels

- https://padlet.com/manulalgeo/questions-cognitive-levels-mlbtvfni2ibjej13

Programme Specific Outcomes

- https://padlet.com/manulalgeo/programme-specific-outcomes-psos-cwsavjyruf90r7wh

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Editorial

Outcome-Based Education: An Open Framework

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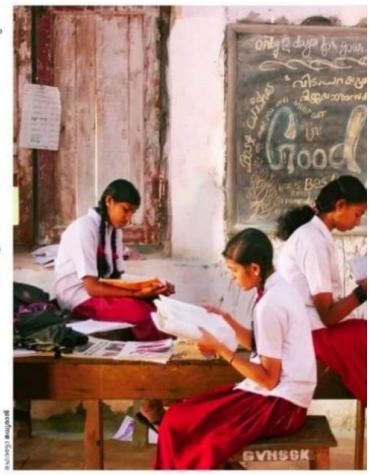
Rajan Gurukkal

Outcome-based education (OBE) has been the effective framework of teaching, learning and evaluation for the UGC and NAAC for the past five years. Nevertheless, most universities in the country are yet to design their academic programmes and curricula. In this context, we have taken OBE as the central theme for the journal's current issue. Four articles directly relate to OBE's general and particular aspects. N. J. Rao's article comprehensively deals with the theory and practice of OBE. Other articles by Manulal P. R. and Shefeeque V. draw on discipline-specific issues and effects of OBE.

■ പാഠ്യപദ്ധതിനവീകരണം

പാഠ്യപദ്ധതിയും ബ്ലൂംസ് ടാക്സോണമിയും

ഡോ. മനുലാൽ പി. ആർ., ഡോ. ഷെഫീഖ് വടക്കൻ



Article

Outcome-based Education: An Outline

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N. J. Rao[1]

Abstract

Things we can do because of learning are called outcomes of learning. Outcome based education (OBE) was propounded by William Spady in the 90s to bring the focus of formal education to what the students learn rather than what they were taught. OBE is a system of education giving priority to ends, purpose, accomplishments, and results. All decisions about the curriculum, assessment, and instruction are driven by the exit learning outcomes the students should display at the end of a program or a course. This paper presents a method of writing outcomes for General higher education programs. Outcomes for a higher education program are defined at three levels as program outcomes (POs), program specific outcomes (PSOs), and course outcomes (COs). The most important aspect of an outcome is that it should be observable and measurable. These are best written in a well-defined framework of taxonomy of learning. Bloom's taxonomy of learning identifies three domains of learning: Cognitive, affective and psychomotor. Revised Bloom taxonomy of cognitive domain has two dimensions cognitive levels and knowledge categories. It is proposed that CO statements be written within a well-defined structure: Action, knowledge elements, conditions, and criteria. Tagging COs with POs, PSOs, cognitive levels and the number of classroom hours associated facilitates the computation of attainment of COs, POs, and PSOs.

THE KERALA STATE HIGHER EDUCATION COUNCIL

OUTCOME BASED EDUCATION

HANDS ON WORKSHOPS

CONSOLIDATED REPORT WITH SAMPLE OUTCOMES

JUNE 2023

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