SREE AYYAPPA COLLEGE

ERAMALLIKKARA, CHENGANNUR, ALAPPUZHA DISTRICT
KERALA

(GOVT. AIDED COLLEGE AFFILIATED TO THE UNIVERSITY OF KERALA)
NAAC Accredited

SSR(CYCLE II)

CRITERIA – II
TEACHING LEARNING & EVALUATION

EVALUATION OF ATTAINMENTS OF POs, PSOs, COs

SUBMITTED TO
NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL (NAAC)
JULY 2023

Evaluation of Attainments of POs, PSOs, COs

Brief Report

Introduction

This report aims to provide a brief evaluation of the attainment on Course Outcomes(COs), Program Outcomes(POs), and Program-Specific Outcomes(PSOs) of all programmes offered by our college. The evaluation is conducted to assess the effectiveness of the educational programs offered by the college and determine the extent to which students are achieving the intended learning outcomes.

Methodology

The evaluation process involved the following steps:

1. **Formulation and publication of Program-Specific Outcomes (PSOs), Program Outcomes (POs) and Course Outcomes (COs):** The syllabus of all the programmes are designed by University of Kerala and College has no direct role on this. Our University is still working on the formulation of these outcomes in the revised syllabi. Some programmes have completed the revision process with clearly defined POs, PSOs and COs. As an example MSc Computer Science(2021 Admn Scheme) has a set of 8 POS, 6 PSOs and 5-10 COs. The BSc Computer Science syllabus(2021 admn scheme) has 4-6 COs for each course. College has published the outcomes of each Programme in the College Website:
   (Ref: https://www.sreeayyappacollege.ac.in/Programme_Outcomes_and_Course_Outcomes) and they are been made familiarized to student of each batch by the concerned faculty in charge.

2. **Assessment Measures:** Various assessment measures are employed to evaluate the attainment of outcomes. Two assessment methods are used by the college to assess the attainment of PO, PSOs and COs. They are

   i) Direct Assessment methods
   ii) Indirect Assessment methods

   In direct assessment methods the marks obtained by students are the primary data used for the calculation part. University has not implemented an outcome based evaluation for their end semester examinations. Hence our College Level Monitoring Committee(CLMC) has initiated steps for implementing this assessment, based on the marks scored by students in their internal evaluation methods like class tests, model examinations, assignments, seminars and practical tests. Mapping of marks to Course Outcomes are tabulated for the model examinations, class tests, seminars and assignments. The questions included in the internal evaluation methods are first mapped to the COs of the concerned courses' syllabi. The model examination, class test, assignment marks and test marks are included for this assessment. Mapping of Course Outcomes(COs) with Programme Outcomes(POs) and Programme Specific Outcomes(PSOs) are tabulated for each course of those programmes where POs and COs are clearly stated in the syllabus by the University.

In indirect assessment, University results, Semester Progress reports, students' placement data, students' progression reports are incorporated to assess the attainments of POs and PSOs. The analysis of the feedbacks collected from students, alumni and employers is another tool for the indirect assessments of POs and PSOs. The ranks obtained by students in various entrance examinations, academic achievements of alumni also are considered as supporting documents for indirect assessments. The responses obtained from curriculum specific queries included in Students Satisfaction Survey(SSS) is yet another measure in indirect evaluation.

3. **Data Collection and Analysis:** Data on student performance and achievement were collected using both qualitative and quantitative methods. This included analyzing examination results, project reports, feedback surveys of alumni, employers, and industry placement records. Students data are directly taken from college LMS Campus Genie. Statistical analysis techniques were applied to interpret the data and identify patterns and trends.

4. **Evaluation Criteria:** Benchmarks or criteria were established to determine the level of attainment for each outcome. The target for CO achievement is above 35% for degree students and above 40% for PG students as set by University for a course pass. The following RUBRICS scale is adopted to define the strength of correlation between the course outcomes (COs) mapped with Programe outcomes (POs) /Programme specific outcomes (PSOs): High Level Correlation -3, Moderate – 2, Low level 1, No correlation 0.

Conclusion: The evaluation of attainment on course outcomes, program outcomes, and program-specific outcomes in the college provides valuable insights into the effectiveness of educational programs. By implementing the recommendations outlined above, the college can work towards improving student achievement, enhancing program quality, and ensuring graduates are well-prepared for their chosen careers. Continuous evaluation and improvement will contribute to the overall success and reputation of the college.

Appendix:

A1: Sample POs MSc Computer Science 2021 Scheme

PROGRAMME OUTCOMES (PO) for M. Sc Computer Science Programme

	PROGRAMME OUTCOMES (PO)
PO1	To develop an interest in the candidates towards a career in academics and research, and to enable them with sufficient knowledge to become a competent academician
PO2	To apply knowledge of mathematical, scientific, and computer science to evaluate, analyze, synthesize, model and integrate technologies to develop new computer system for applied engineering systems.
PO3	To equip the students with adequate exposure and skills to empower them to catch a deserving position in the software industry.
PO4	Ability to identify, critically analyze and formulate complex computing problems using fundamentals of computer science and application domains.
PO5	To develop an interest in promoting the use of Computer Science for the positive development of our society and the environment
PO6	Recognize the need for and develop the ability to engage in continuous learning as a Computing professional.
PO7	Create, identify and apply appropriate techniques, resources, and modern computing tools to complex computing activities.
PO8	To enable the students to contest for regional/national/international level competitive examinations.

A2: Sample PSOs MSc Computer Science 2021 Scheme

Programme Specific Outcomes

The students on completion of M.Sc (Computer Science) Programme will be able to:

PSO1	Communicate computer science concepts, designs, and solutions effectively and professionally
PSO2	Apply knowledge of computing to produce effective designs and solutions for specific problems
PSO3	Use of software development tools, software systems, and modern computing platforms to solve real life problems
PSO4	Investigate research gaps, analyze and carry out research in the specialized/emerging areas
PSO5	Apply knowledge of recent computing technologies, skills and current tools of computer science
PSO 6	Utilize skills and knowledge for computing practice with commitment on social, ethical, cyber and legal values

A3: Sample COs & Syllabus MSc Computer Science 2021 Scheme

CS2134 C Bioinformatics

SEMESTER	III	COURSE CODE : CS 2134 C	CREDIT :3

BIOINFORMATICS

COURSE OUTCOMES

CO1	Acquire basic knowledge in Life science
CO2	Obtain detailed knowledge about Bioinformatics
CO3	Appreciate the design of biological databases to hold enormous data
CO4	Implement algorithms used for sequence analysis
CO5	Demonstrate the use tools in bioinformatics
CO6	Identify how computer science is closely associated with Biology

COURSE CONTENT

Module I: Introduction to life Science : Characteristics of life, Levels of biological Organization, cell as basic unit of life, cell theory, structure of Prokaryotic cell and Eukaryotic cell, Primary and secondary structure of DNA, Chargaff's Rules, Different forms of DNA, RNA, structural organization of DNA, Central Dogma of Molecular Biology, Gene and genetic information

Module II: Bioinformatics: Introduction, History of Bioinformatics, Definition of Bioinformatics, Bioinformatics versus Computational Biology, Goals of Bioinformatics analysis, Bioinformatics technical tool box, Biological data, File format, conversion of file format, Data retrieval system, Genome browsers, Branches of Bioinformatics

Module III: Biological Sequences: Analyzing DNA sequence, IUPAC code for DNA sequence, ORF, palindromes in DNA sequence, RNA sequence analysis; FASTA format. Sequence analysis: DNA sequence, RNA sequence, Protein sequence; Sequence alignment : classifications, Scoring Matrices – PAM, BLOSUM, Pairwise Alignment Method (DOT PLOT method) and Multiple Alignment

Module IV: Biological Databases: Types of databases, Nucleotide sequence databases, Primary nucleotide sequence databases-EMBL, GenBank, DDBJ; Secondary nucleotide databases, Protein sequence databases-SwissProt/ TrEMBL, Protein structure databases- Protein Data Bank

Module IV: Bioinformatics Tools: ORFFinder, Sequence comparison Tools – BLAST, FASTA; Prediction Tools – GENSCAN, SNP; Visualization Tools – RasMol, PyMol, SWISS-PDBViewer; Phylogenetic Tools – Mega, ClustalW, CADD Tools : GOLD, Auto Dock

Module VI: Human Genome Project, Importance of Perl language in Bioinformatics, Applications of Bioinformatics in Biodiversity, Human Genetics, Gene Therapy, Agriculture, Computer-Aided Drug Design, DNA Fingerprinting

References

Text books

1. P S Verma, V K Agarwal, Cell Biology, enetics, Molecular Biology, Evolution and Ecology, S. Chand Publications.
2. S C Rastogi, N Mendiratta, P Rastogi, Bioinformatics Methods and Applications, PHI
3. Jin Xiong, Essential Bioinformatics, Cambridge University Press
4. Jean-Michel Claverie, Cedric Notredame, Bioinformatics: A Beginner's Guide, Wiley, 2006
5. Dr. K Mani & N Vijayaraj, Bioinformatics: A practical approach, Aparna Publications

Additional and Web -Resources
1. https://nptel.ac.in/courses/102/106/102106065
2. http://www.cs.ukzn.ac.za/-hughm/bio/docs/IntroToBioinfAlgorithms.pdf

A4: Sample CO – PO and CO – PSO Mapping of Courses

Programme: MSc Computer Science 2021 Scheme

Corse: CS2134C Bioinformatics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	1	3	1	1	1	1	3	3	3	1	3	1	1
CO2	3	1	3	1	3	2	2	3	3	3	1	3	1	1
CO3	3	1	1	2	1	3	3	1	1	1	3	2	3	1
CO4	1	2	3	3	3	3	3	1	1	3	3	1	3	1
CO5	1	2	1	3	1	3	3	2	3	1	3	1	3	2
CO6	3	1	3	1	1	2	1	1	3	1	1	1	1	2
Total	12	8	14	11	10	14	11	11	14	12	12	11	12	8

Analysis:

Strength of Correlation contributed by each COs of Bioinformatics Course to each POs and PSOs are specified in the above table. PO2 and PSO6 correlation to the course. CO4 has maximum Contribution to POs and CO5 has maximum contribution to PSOs.

A5: Sample CO attainment

Third Semester MSc Computer Science (2021 Admn)
First Series Test and Model Marks

Semester: III   Date : 21.12.2022
Subject Code: CS 2134C   Staff: Sobha P K
Suject Name: Bioinformatics

CO Attainment (Marked in Yellow)

Sl no	Reg no	Name	Test (30)				Model (75)						
		CO	CO1	CO2	CO6	Total	CO1	CO2	CO3	CO4	CO5	CO6	Total
		Max Marks	21	3	13.5	30	28	19	16	19	22	22	75
		Target(40%)	5.25	0.75	9.5	7.5	7	4.75	4	4.75	5.5	5.5	30
1	65421135001	Ananthu R	1	1	0	2	10	6	5	1	5	6	33
2	65421135002	Karthika J.S	1.5	1	1	3.5	12	10	10	8	6	6	52
3	65421135003	Manju J M	0.5	0	0	0.5	7	5	4	2	2	6	26
4	65421135004	Meenu murali	2	1	1	4	8	5	1	6	6	6	32
5	65421135005	Silpa K.O	1	0,5	0	1.5	7	5	6	4	6	8	36
6	65421135006	Surya R	1	0.5	5	1.5	12	6	8	6	2	6	40
7	65421135007	Vinuja Vijayan	2	0.5	0.5	3	10	4	4	6	1	2	27

A6: Sample Progress Reports

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PROGRESS REPORT - Class Test 1

Name: ANASOOYA K NAIR	Class No: 2
Class: MAT S6 (19-22)	Batch: 2019-22UG

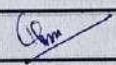| Subjects	Mark Obtained	Max Mark	Pass Mark	Att %	Class Average
Linear Algebra	69	80	28	97.01	17.25
Integral Transforms	68	80	28	100.00	17.00
Abstract Algebra –Ring Theory	65	80	68	86.67	16.25
Graph Theory	68	80	28	95.83	55.00
Real Analysis II	71	80	28	94.00	17.75
Complex Analysis II	75	80	28	91.11	18.75
Total	416/480	480			142.00/480
Parent Signature					
Faculty Advisor Signature					
Principal Signature					
Remarks					

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PROGRESS REPORT - Class Test 1

Name: K S SARIKA	Class No: 14
Class: CS S6 (19-22)	Batch: 2019-22UG

Subjects	Mark Obtained	Max Mark	Pass Mark	Att %	Class Average
Data Mining & Warehousing	75	80	28	96.92	4.17
Internet of Things	70	80	28	92.68	18.17
Artificial Intelligence	64	80	28	90.38	22.72
Geographical Information System (EL)	75	80	28	92.31	24.06
Total	284/320	320			69.11/320
Parent Signature					
Faculty Advisor Signature					
Principal Signature					
Remarks					

7/9

A7: Sample Result Analysis

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SREE AYYAPPA COLLEGE (TDB), ERAMALLIKKARA

DEPARTMENT OF COMPUTER SCIENCE

MSc COMPUTER SCIENCE (2020 Admn)

First Semester Result Analysis

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S1 Exam : August 2021   Result Published : March 11, 2022

Sl no	Reg.No	Name	Mark	Result
1	65420135001	Akhil SS	493	Semester Pass
2	65420135002	Akhila S	415	Semester Pass
3	65420135003	Akshay B	461	Semester Pass
4	65420135004	Anandhu O R	482.5	Semester Pass
5	65420135005	Anooj P Raj	Fail	
6	65420135006	Anusha M	485.5	Semester Pass
7	65420135008	Devika N	487	Semester Pass
8	65420135009	Jeena Jacob	Fail	
9	65420135011	Rithu Santhosh	422	Semester Pass

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University Pass Percentage: 65.32
Department Pass Percentage: 77.78

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4/4/2022   **Jisha Nair B J (Class in Charge)**

A8 : PG Entrance Exam Ranks

LBS CENTRE FOR SCIENCE AND TECHNOLOGY

(A Government of Kerala Undertaking)
Nandavanam, Palayam, Thiruvananthapuram - 695 033, Kerala
Phone:0471-2324396,2324148,2324101; Fax:0471-2337055
Email: director.lbs@kerala.gov.in; Website: www.lbscentre.kerala.gov.in

Admission to MCA 2022

SCORE CARD

Personal Details

Application No	: 2200878
Roll No	: 22101117
Name	: SARIKA K S
DOB	: 18 Apr 2001

Address	: KALEEKKAVADAKKATHIL, KAMPALADY, PORUVAZHY, PORUVAZHY, KOLLAM - 690520
Contact Number	: 8075841629

Entrance Mark and Rank

MARKS SCORED (Out of 120)	RANK
90	1

Dr. ABDUL RAHIMAN
DIRECTOR

Cochin University of Science and Technology

കൊച്ചി ശാസ്ത്ര സാങ്കേതിക സർവ്വകലാശാല

Academic Admissions CAT- 2022

PROVISIONAL ADMIT CARD

Registration Number:	22100834	
Roll Number:	2309030007	
Name of the Candidate:	K S SARIKA	
Address:	kaleekkavadakkathil Kampalady,Poruvazhy PO, Kollam, Kerala	
Pincode:	690520	
Test Centre City:	Kollam	
Test Centre Code:	9498	
Test Venue:	iON Digital Zone iDZ Kollam Sree Buddha Center for Information and Technology, Kallumthazham PO, Near Palkulangara Bhagavathi Temple, Kollam, Kerala, India – 691004	

K S SARIKA
02.02.2022

Test Subject	Date	Time(IST)	Candidate Signature	Invigilator's Signature / Seal
502 Aptitude Test for MSc Computer Science 2022	15/05/2022	4:00 PM - 6:00 PM		

CAT Reg No : 22100834

Candidate Name : K S SARIKA

Course	General Rank
M.C.A (MCAP)	159
M.Sc. Computer Science with specialization in Artificial Intelligence (MSCOSC)	6
M.Sc. Computer Science with specialization in Data Science (MSCODS)	5