

SACRED HEART COLLEGE FOR WOMEN

CHALAKUDY, THRISSUR, KERALA



AQAR 2020-21

CRITERION I - Curricular Aspects

SUB CRITERION - -1.2.1 - Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented

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AQAR 2020-21

ECONOMICS

Criterion I - Curricular Aspects

SUB CRITERION -1.2.1 - Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented



UNIVERSITY OF CALICUT

Abstract

General and Academic- Faculty of Humanities- Syllabus of BA Economics Programme under CBCSS UG Regulations 2019 with effect from 2019 Admission onwards - Implemented- Orders Issued

G & A - IV - B

U.O.No. 16821/2019/Admn

Dated, Calicut University.P.O, 30.11.2019

- Read:-*1.UO. No. 4368/2019/Admn Dated: 23.03.2019
2. UO No. 8482/2019/Admn dated 30.06.2019.
3.Minutes of the meeting of the Board of Studies in Economics - UG held on 03.09.2019 (Items no.1)
4.Remark of the Dean, Humanities vide e mail dated 30.10.2019
5. Item No. I-35 of the minutes of the LXXX meeting of Academic Council held on 05.10.2019.

ORDER

1. The Regulations for Choice Based Credit and Semester System for Under Graduate (UG)Curriculum-2019 (CBCSS UG Regulations 2019) for all UG Programmes under CBCSS-Regular and SDE/Private Registration with effect from 2019 Admission has been implemented vide paper read as (1) above.
2. The Scheme and Syllabus of I and II Semester **BA Economics Programme** in accordance with the new CBCSS UG Regulations 2019, has been implemented in the University with effect from 2019 Admission onwards, vide paper read (2) above.
3. The meeting of the Board of Studies in Economics-UG held on 03.09.2019 has approved the Syllabus of **BA Economics Programme** in tune with new CBCSS UG Regulation implemented with effect from 2019 Admission onwards vide paper read as (3) above.
4. The Dean, Faculty of Humanities has conveyed his approval for the Syllabus of the **BA Economics Programme** vide paper read as (4) above.
5. The Academic Council at its meeting held on 05.10.2019 has approved the Syllabus of **BA Economics Programme** (III to VI Semester) in accordance with the new CBCSS UG Regulations 2019, in the University with effect from 2019 Admission onwards vide paper read as (5) above and sanction has been accorded by Vice Chancellor on 21.10.2019 to implement the resolution of Academic Council.
6. The scheme and syllabus of **BA Economics Programme** (III to VI Semester) in accordance with CBCSS UG Regulations 2019, is therefore implemented in the University with effect from 2019 Admission onwards.
7. Orders are issued accordingly. (Scheme and Complete Syllabus Semester 1 to VI appended)

Ajitha P.P

Joint Registrar

To

1.The Principals of all Affiliated Colleges 2. Director, SDE
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Section Officer

CHOICE BASED CREDIT AND SEMESTER SYSTEM FOR UNDER GRADUATE (UG) PROGRAMME

UNIVERSITY OF CALICUT



For

BA Economics (2019-20 Admissions Onwards)

Under

**Calicut University Regulations Choice Based Credit
And Semester System For Under Graduate(UG)
Curriculum-2019(CBCSSUG 2019)**

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Foreword

Economics is about choice and the impact of our choices on each other. It relates to every aspect of our lives, from the decisions we make as individuals or families to the structures created by governments and firms. The economic way of thinking can help us make better choices. An undergraduate degree in economics seeks to educate students about how choices are made by consumers, workers and firms, and how these decisions aggregate into economy-wide phenomena. At the same time, one should remember that Economics is not primarily a collection of facts to be memorized, though there are plenty of important concepts to be learned. Instead, economics is better thought of as a collection of questions to be answered or puzzles to be worked out. Most important, economics provides the tools to work out those puzzles. Learning about economics helps you understand the major problems facing the world today, prepares you to be a good citizen, and helps you become a well-rounded thinker.

Among the phenomena that influence our society, those related to the economy attract much attention. Unemployment, inflation, interest rates, exchange rates, jobs, productivity, investment are terms encountered daily in the media. It is not always easy to unravel the mass of information which is conveyed. Economics is the discipline that seeks to understand such phenomena and analyze the relationships between them. More precisely, economics examines how a country's resources are used to fulfill the needs of its citizens. It is concerned with the production, distribution and consumption of goods and services. A well trained economist develops many sensibilities and capacities to understand and improve the workings of various facets of life. The undergraduate program is designed to help produce economists who are socio-politically engaged, quantitatively adept, historically informed and philosophically grounded.

Keeping in mind the above objectives, the new UG Curriculum has incorporated many of the recent economic theories and concepts in the syllabus to equip the students to be thorough in the area of Economics. We have introduced new core courses like Development of Economic Thought, Financial Economics, Behavioural Economics and Basic Econometrics along with a thorough revision of the existing courses.

BA Economics Curriculum: CBCSS 2019

The finalization of the current syllabus is the result of various deliberations and personal communications with the experts and resource persons in the branch of Economics in and outside the university. I thank one and all for bringing out drastic changes in the existing Syllabi of UG Economics of University of Calicut. A special thanks to the honorable Board Members whose efforts and support has made my task easy. I request the student body to make use the curriculum and Syllabi for your better future.

Dr. C. Krishnan

Chairman (UG Board of Economics)

BA Economics Curriculum: CBCSS 2019

LIST OF MEMBERS OF BOARD OF STUDIES IN ECONOMICS UG

Sl.No	Name	Address	e-mail
1	Dr. C. Krishnan (Chairman)	Associate Professor & Vice Principal Govt. College Kodanchery, Kozhikode- 673 580	ckcalicut@ rediffmail.com
2	Sri. Abdu Razaque. P.M	Assistant Professor, EMEA College, Kondotty	razakemea@ gmail.com
3	Dr. K. Ambili	Assistant Professor, SreeKrishna College, Guruvayur	ambiliksunil@ gmail.com
4	Sri. Emmanuel Thomas	Assistant Professor, St. Thomas College , Trichur	etkanatt@ gmail.com
5	Dr. Louis Kattady	Associate Professor, Malabar Christian College, Calicut	louiskattady@ yahoo.com
6	Dr. Maya. C. Pillai	Associate Professor, NSS College, Ottapalam, Palakkad	mayacpillai@ gmail. Com
7	Sri. Mohammed Aslam. M	Associate Professor, MES Mampad College	mmaslam61@ gmail. Com
8	Smt. Rajimol. M.S	Assistant Professor, NMSM Govt. College, Kalpatta	msrajibin@ gmail. Com
9	Sri. Sayooj Kumar. K.P	Assistant Professor, SNG College, Chelannur	sayoojkumarkp@ gmail.com
10	Smt.Suprabha. L	Assistant Professor, Govt. College, Malappuram	suprabhajith@ gmail.com
11	Dr. K.X. Joseph (Ex-officio member)	Professor, Dr. John Mathai Centre, Trichur	kx_ joseph@ rediffmail.com

REVISED CURRICULUM OF BA PROGRAMME IN ECONOMICS

(Effective from 2019-20 Admissions)

1. Aims and Objectives

The Bachelor's degree Programme in Economics aims to provide theoretical and practical knowledge that makes accurate analysis of the economic situation possible. The Calicut University Economics graduates must be able to understand the interrelation between the economy and society; to consider economic problems from a global perspective and take a local approach to solving them; to make connections between an economic system's different components; to gauge the implications of decisions related to economic policy; and to respond to the economic problems arising from society in general and the different units that interact therein (e.g. institutions, private companies and sectors of the economy). The curriculum covers topics from expanding markets to the impact of 2008 global financial crisis. It provides an excellent background for those who plan careers in government and private enterprise as well as those pursuing graduate degrees in professional schools or in the field of economics

2. Programme Outcomes:

The learners are expected to demonstrate the following:

- Critically evaluate and apply the theories and techniques of economics.
- Demonstrate subject-specific 'thinking' skills that are readily transferable to problem solving and decision making in a wider context.
- Enhance their lifelong learning, employing a range of practical and professional skills.
- Find, evaluate, synthesize and use information from a variety of sources
- Articulate an awareness of the social and community contexts within their disciplinary field

3. BA Programmes in Economics

The Board is presenting revised syllabus for BA Economics Programmes with four different Specializations, viz.

1. BA Economics
2. BA Development Economics
3. BA Economics with Foreign Trade
4. BA Economics with Islamic Finance

While most of the core papers remain part of all the programmes, there are some additional courses depending upon the specializations. While BA Development Economics has some additional courses related to development issues, BA Economics with Foreign Trade Programme specializes in foreign trade practices. BA Economics with Islamic Finance gives thrust to Islamic finance. All the three programmes (BA Development Economics; BA Economics with Foreign Trade and BA Economics with Islamic Finance) are equivalent to BA Economics (Regular) programme for the purpose of employment and higher studies.

4. Eligibility for admission:

Any candidate who passed Plus Two of the Higher Secondary Board of Kerala or equivalent examinations of any other University or Board of Examinations in any state recognized as equivalent to Plus Two of the Higher Secondary Board in Kerala. However, the candidates who have studied Economics for the qualifying examinations shall be given some weightage while calculating the index marks for admission.

5. Duration of the programme:

The duration of the BA Economics programme is three academic years with six semesters

6. Medium of Instruction and Examination

The medium of instruction and question papers are in English only. However, the students have the option to answer the questions either in English or in Malayalam.

BA Economics Curriculum: CBCSS 2019

7. Course Structure

The UG programme shall include five types of courses, viz; Common Courses (Code A), Core courses (Code B), Complementary courses (Code C), Open Course (Code D) and Audit courses (Code E).

8. **Common Courses:** In general, every UG student shall undergo 10 common courses (total 38 credits) chosen from a group of 14 common courses listed in the UG Regulation, for completing the programme.

9. **Core Courses:** Core courses are the courses in the major (core) subject of the degree programme chosen by the student. There are 14 Core courses in the BA Economics programme.

10. **Complementary courses:** Complementary courses cover one or two disciplines that are related to the core subject and are distributed in the first four semesters. There shall be one complementary course in a semester for B.A Programmes. The complementary courses in first and fourth semester (Type 1) shall be the same. Similarly the complementary courses in second and third semester (Type 2) shall be the same. The college can choose any complementary course either in Type 1 or in Type 2 for a programme. Once they choose the complementary courses that should be intimated to the university. If a college wants to change the complementary course pattern (Type 1 or Type 2) prior sanction has to be obtained.

11. **Open courses:** Open courses are the courses offered by a department to the students of other departments. Students can select a course of their own choice offered by other departments. There shall be one open course in core subjects in the fifth semester. The open course shall be open to all the students in the institution except the students in the parent department. The students can opt that course from any other department in the institution. Each department can decide the open course from a pool of three courses offered by the University. Total credit allotted for open course is 3 and the hours allotted is 3. If there is only one programme in a college, they can choose either language courses or physical education as open course.

12. Elective Course

Under the choice-based credit semester system, there is the provision of an elective course. The university offers three elective courses in the sixth semester of a programme and of which the college can choose one.

13. Ability Enhancement courses/Audit courses: These are courses which are mandatory for a programme but not counted for the calculation of SGPA or CGPA. There shall be one Audit course each in the first four semesters. These courses are not meant for class room study. The students can attain only pass (Grade P) for these courses. At the end of each semester there shall be examination conducted by the college from a pool of questions (Question Bank) set by the University. The students can also attain these credits through online courses like SWAYAM, MOOC etc (optional). The list of passed students must be sent to the University from the colleges at least before the fifth semester examination. The list of Audit courses in each semester with credits are given below.

SL.No.	Course	Credit	Semester
1	Environment Studies	4	1
2	Disaster Management	4	2
3	*Human Rights/Intellectual Property Rights/ Consumer Protection	4	3
4	*Gender Studies/Gerontology	4	4

* Colleges can choose any one of the courses.

Altogether there will be 34 courses in the Programme with 14 Core Courses, 10 Common Courses, two Complementary Courses (spread over 4 semesters), one Elective course, one Open Course and four Audit Courses. In addition, there shall be a project work or a theory paper on Research Methodology in the Sixth semester. The Project work is to be handled by the Economics faculty in each college.

14. Credit Distribution of the Programme

A student is required to acquire a minimum of 140 credits for the completion of the UG Programme, of which 120 credits are to be obtained from class room study and shall only be counted for SGPA and CGPA. Out of the 120 credits, 38 (22 for common (English) courses plus

BA Economics Curriculum: CBCSS 2019

16 for common languages other than English) credit shall be from common courses, two credits for project/corresponding paper and three credits for the open course. The maximum credits for a course shall not exceed five. Audit courses shall have four credits per course and a total of 16 credits in the entire programme. The maximum credit acquired under extra credit shall be four. If more Extra Credit activities are done by a student, that may be mentioned in the Grade Card. Please remember that the credits of Audit courses and Extra credits are not counted for SGPA or CGPA. To have a better look at the credit distribution, refer the table below:

Table 2: Distribution of Credit among various courses, Semester-wise

Semester/ Credits	Common courses	Complementary courses	Core Courses	Open Course	Elective Course	Total
I	10	4	5	--	--	19
II	12	4	5	--	--	21
III	8	4	8	--	--	20
IV	8	4	8	--	--	20
V	--	--	16	3	--	19
VI	--	--	18	--	3	21
Total	38	16	60	3	3	120

Note: Note: In addition, there are 16 credits of Audit courses spread over the first four semesters and 4 extra credits as mandatory to complete the BA Economics Programme.

15. Extra Credits

Extra credits are mandatory for the programme. Extra Credits will be awarded to students who participate in activities like NCC, NSS and Swatch Bharath. Those students who could not join in any of the above activities have to undergo the Calicut University Social Service Programme (CUSSP).

16. CALICUT UNIVERSITY SOCIAL SERVICE PROGRAMME (CUSSP)

In this Programme, a student has to complete 12 days of social service. This has to be completed in the first four semesters; 3 days in each semester. For the regular Programme the student has to work in a Panchayath or Local body or in a hospital/ poor home or old age home or in a Pain & palliative centre or any social work assigned by the College authorities. Students who engage in College Union activities and participate in sports and cultural activities in Zonal level have to undergo only 6 days of CUSSP during the entire programme. The whole documents regarding

BA Economics Curriculum: CBCSS 2019

the student should be kept in the college and the Principal should give a Certificate for the same. The list of students (successfully completed the programme) must be sent to the University before the commencement of the fifth semester examinations. A College level Coordinator and a Department level Co-ordinator shall be appointed for the smooth conduct of the programme

17. Course Code

As already stated, the UG programme shall include five types of courses, viz; Common Courses (Code A), Core courses (Code B), Complementary courses (Code C), Open Course (Code D) and Audit courses (Code E). Each course shall have a unique alphanumeric code number, which includes abbreviation of the subject in three letters, the semester number (1 to 6) in which the course is offered, the code of the course (A to E) and the serial number of the course (01,02). The course code will be centrally generated by the university. For example: ENG2A03 represents a common course of serial number 03 offered in the second semester and ECO2B02 representing second semester Core course 2 in Economics programme. The four variants of UG Economics programme of University of Calicut have different subject code as given here under:

Sl.No.	Programe(s)	Subject code of Core Course
1	BA Economics programmes	ECO
2	BA Development Economics	DEC
3	BA Economics with Foreign Trade	EFT
4	BA Economics with Islamic Finance	EIF

18. Structure/Scheme of BA Economics Programme

The semester-wise scheme of BA Economics programme is presented here under.

Semester I				
Course	Code	Name of the paper	Hours	Credit
Common I	A01	Common English Course I	4	3
Common II	A02	Common English Course II	5	3
Common III	A07(1)	Additional Language Course I	4	4
Core 1	ECO1 B01	Microeconomics I	6	5
Complementary (Type 1-Course I)			6	4
Ability Enhancement/Audit I	AUD1E01	Environment Studies	--	4
Total			25	23

BA Economics Curriculum: CBCSS 2019

Semester II				
Course	Code	Name of the Course	Hours	credit
Common IV	A03	Common English Course III	4	4
Common V	A04	Common English Course IV	5	4
Common VI	A08(1)	Additional Language Course II	4	4
Core 2	ECO2 B02	Macroeconomics I	6	5
Complementary (Type 2-Course I)			6	4
Ability Enhancement/Audit 2	AUD2E02	Disaster Management	--	4
Total			25	25

Semester III				
Course	Code	Name of the Course	Hours	credit
Common VI I	A05	Common English Course V	5	4
Common VIII	A09	Additional Language Course III	5	4
Core 3	ECO3 B03	Quantitative Methods for Economic Analysis I	5	4
Core 4	ECO3 B04	Microeconomics II	4	4
Complementary (Type 2-Course 2)			6	4
Ability Enhancement/Audit 3	AUD3E03	Human Rights/Intellectual Property Rights/ Consumer Protection	-	4
Total			25	24

Semester IV				
Course	Code	Name of the Course	Hours	credit
Common IX	A06	Common English Course VI	5	4
Common X	A10	Additional Language Course IV	5	4
Core 5	ECO4 B05	Quantitative Methods for Economic Analysis II	5	4
Core 6	ECO4 B06 –	Macroeconomics II	4	4
Complementary (Type 1-Course 2)			6	4
Ability Enhancement/Audit 4	AUD4E04	Gender Studies/Gerontology	-	4
Total			25	24

BA Economics Curriculum: CBCSS 2019

Semester V				
Course	Code	Name of the Course	Hours	credit
Core 7	EC05 B07	Fiscal Economics	6	4
Core8	ECO5 B08	Indian Economic Development	6	4
Core 9	ECO5 B09	Economics of Capital Market	5	4
Core 10	ECO5 B10	Mathematical Economics	5	4
Open Course		To be selected from any other Departments	3	3
Total			25	19

Semester VI				
Course	Code	Name of the Course	Hours	credit
Core 11	ECO6 B11	Financial Economics	5	4
Core 12	EC06 B12	International Economics	5	4
Core 13	ECO6 B13	Development of Economic Thought	5	4
Core 14	ECO6 B14	Economics of Growth and Development	5	4
Elective(Choose one among the three)	ECO6 B16	Basic Econometrics	3	3
	ECO6 B17	Behavioural Economics		
	ECO6 B18	Urban Economics		
Project	ECO6 B15	Project work/Research Methodology	2	2
Total			25	21

Note: A compulsory study tour is recommended as part of the paper entitled "Indian Economic Development", in the Fifth Semester. The tour report should be submitted to the Head of the Department within two weeks of the tour.

19. Distribution of courses in each semester

As per the UG regulation, the courses are distributed over various semesters. For the information of the stakeholders, the details are provided here with. The semester-wise distribution of courses for the completion of BA Economics Programme is given in the following Table.

BA Economics Curriculum: CBCSS 2019

Course/Semester	I	II	III	IV	v	VI
Common	3	3	2	2	--	--
Core	1	1	2	2	4	4
Complementary	1	1	1	1	--	--
Audit/Ability enhancement	1	1	1	1	--	--
Open	--	--	--	--	1	--
Elective	--	--	--	--	--	1
Project/Theory	--	--	--	--	--	1
Total	6	6	6	6	5	6

20. Core Courses at a Glance

A glance at the core courses offered in the BA Economics is given in the table:

Semester	Course code	Name of Course
I	ECO1 B01	Microeconomics I
II	ECO2 B02	Macroeconomics I
III	ECO3 B03	Quantitative Methods for Economic Analysis I
	ECO3 B04	Microeconomics II
IV	ECO4 B05	Quantitative Methods for Economic Analysis II
	ECO4 B06	Macroeconomics II
V	ECO5 B07	Fiscal Economics
	ECO5 B08	Indian Economic Development
	ECO5 B09	Economics of Capital Market
	ECO5 B10	Mathematical Economics
VI	ECO6 B11	Financial Economics
	ECO6 B12	International Economics
	ECO6 B13	Development of Economic Thought
	ECO6 B14	Economics of Growth and Development
	ECO6 B15	Project/Research methodology

21. Complementary Courses

Colleges can choose from the complementary courses offered by the University without affecting the existing workload. The syllabus for complementary courses of sister departments are prepared by the respective Boards of studies. The following complementary courses are suggested for the BA Economics programme with the option for choice (**two Complementary courses can be selected**).

1. History
2. Political Science
3. Sociology
4. Psychology

5. Mathematical Tools for Economics

6. Co-operation

7. Banking

8. Introductory Economics (For Non-Economics Programmes)

22. Open Courses

During the Fifth Semester three Open courses are offered to the students of other departments.

Colleges can choose any one course from the three listed below.

ECO5 D01 - Economics in Everyday Life

ECO5 D02 – Indian Financial System

ECO5 D03 – Kerala Economy

23. Elective Courses

During the Sixth Semester, three elective courses are offered for BA Economics Programme.

Colleges can choose any one course from the three listed below.

ECO6 B16 –Basic Econometrics

ECO6 B17 – Behavioural Economics

ECO6 B18 – Urban Economics

24. Project - ECO6 B15 (Pr)

As part of the requirements for BA Programme, regular students have an option to carry out a project either individually or as a group, under the supervision of a teacher. Project work is meant for providing an opportunity to approach and study a problem in a systematic and scientific manner. It provides them an opportunity to apply the tools they have studied and learn the art of conducting a study and presenting the report in a structured way. The report of the project, completed in every respect, is to be submitted to the department for valuation by the examiners appointed by the University. The college may also choose a theory course on Research Methodology instead of Project work. But a college cannot choose both project and research methodology course simultaneously.

25. Study Tour

A compulsory study tour is recommended as part of the paper entitled "Indian Economic Development" in the Fifth Semester and the tour report should be submitted to the Head of the Department soon after the tour.

26. Assessment and Evaluation

Mark system is followed instead of direct grading for each question. For each course in the semester letter grade and grade point are introduced in 10-point indirect grading system as per guidelines. The evaluation scheme for each course shall contain two parts: 1) Internal assessment 2) External Evaluation. 20% weight shall be given to the internal assessment. The remaining 80% weight shall be for the external evaluation.

26.1. Internal Evaluation:

The internal assessment shall be based on a pre-determined transparent system involving written tests, Class room participation based on attendance in respect of theory courses and lab involvement/records attendance in respect of Practical Courses. Internal assessment of the project will be based on its content, method of presentation, final conclusion and orientation to research aptitude. Components with percentage of marks of Internal Evaluation of Theory Courses are- Test paper 40%, Assignment 20%, Seminar 20% and Class room participation based on attendance 20%.

For the test paper marks, at least one test paper should be conducted. If more test papers are conducted, the mark of the best one should be taken. To ensure transparency of the evaluation process, the internal assessment marks awarded to the students in each course in a semester shall be notified on the notice board at least one week before the commencement of external examination. There shall not be any chance for improvement for internal marks. The course teacher(s) shall maintain the academic record of each student registered for the course, which shall be forwarded to the University by the college Principal after obtaining the signature of both course teacher and Head of the Department. The Split up of marks for Test paper and Class Room Participation (CRP) for internal evaluation are as follows.

Split up of marks for Test paper

Range of Marks in test paper	Out of 8 (Maximum internal marks is 20)	Out of 6 (Maximum internal marks is 15)
Less than 35%	1	1
35-45%	2	2
45-55%	3	3
55-65%	4	4
65-85%	6	5
85-100%	8	6

Split up of marks for Class Room Participation

Range of CRP	Out of 4(Maximum Internalmarks is 20)	Out of 3 (Maximuminternal marks is 15)
50% ≤CRP <75%	1	1
75% ≤CRP <85%	2	2
85 % and above	4	3

26.2. External Evaluation

External evaluation carries 80% of marks. All question papers shall be set by the University. The external question papers may be of uniform pattern with 80/60 marks. The courses with 2/3 credits will have an external examination of 2 hours duration with 60 marks and courses with 4/5 credits will have an external examination of 2.5 hours duration with 80 marks. The external examination in theory courses is to be conducted by the University with question papers set by external experts. The project evaluation with viva can be conducted either internal or external which may be decided by the Board of Studies concerned. Guidelines are given in the syllabus. After the external evaluation only marks are to be entered in the answer scripts. All other calculations including grading are done by the University.

Evaluation of Audit courses: The examination shall be conducted by the college itself from the Question Bank prepared by the University. The Question paper shall be of 100 marks of 3 hour duration. For SDE/Private students it may be of MCQ/ fill in the blank type questions or Online question paper may be introduced.

26.3. Method of Indirect Grading

Evaluation (both internal and external) is carried out using Mark system .The Grade on the basis of total internal and external marks will be indicated for each course, for each semester and for the entire programme. Indirect Grading System in 10 -point scale as depicted in the table. An aggregate of P grade (after external and internal put together) is required in each course for a pass and also for awarding a degree (A minimum of 20% marks in external evaluation is needed for a pass in a course. But no separate pass minimum is needed for internal evaluation). No separate grade/mark for internal and external will be displayed in the grade card; only an aggregate grade will be displayed. Also the aggregate mark of internal and external are not displayed in the grade card. A student who fails to secure a minimum grade for a pass in a course is permitted to write the examination along with the next batch.

Percentage of Marks (Both Internal & External put together)	Grade	Interpretation	Grade point Average (G)	Range of grade points	Class
95 and above	O	Outstanding	10	9.5-10.0	First Class with Distinction
85 to below 95	A+	Excellent	9	8.5 -9.49	
75 to below 85	A	Very Good	8	7.5 -8.49	
65 to below 75	B+	Good	7	6.5 -7.49	First Class
55 to below 65	B	Satisfactory	6	5.5 -6.49	
45 to below 55	C	Average	5	4.5 -5.49	Second Class
35 to below 45	P	Pass	4	3.5 -4.49	Third Class
below 35	F	Failure	0	0	Fail
Incomplete	I	Incomplete	0	0	Fail
Absent	Ab	Absent	0	0	Fail

27. External Examination Scheme

There shall be University examinations at the end of each semester. Each question should aim at – (1) assessment of the knowledge acquired (2) standard application of knowledge (3) application of knowledge in new situations. Different types of questions shall possess different marks to quantify their range. Project evaluation shall be conducted at the end of sixth semester. 20% of marks are awarded through internal assessment.

Question paper type 1- Scheme of Examinations:

The external Question Paper (QP) with 80 marks and internal examination is of 20 marks. Duration of each external examination is 2.5 Hrs. The pattern of External Examination is as given below. The students can answer all the questions in Sections A& B. But there shall be Ceiling of marks in each section.

Section	Type of Question	No. of Questions	All Questions may be answered	Marks for each question	Ceiling of Marks	Total Marks
A	Short Answer Type	15	15	2	25	25
B	Paragraph/problem type	8	8	5	35	35
C	Essay Type	4	2	10	20	20
	Total	27	25	--	80	80

Question paper type 2: Scheme of Examinations:

The external QP with 60 marks and Internal examination is of 15 marks. Duration of each external examination is 2 Hours. The pattern of External Examination is as given below. The students can answer all the questions in Sections A& B. But there shall be Ceiling of marks in each section.

BA Economics Curriculum: CBCSS 2019

Section	Type of Question	No. of Questions	All Questions may be answered	Marks for each question	Ceiling of Marks	Total marks
A	Short Answer Type	12	12	2	20	20
B	Paragraph/problem type	7	7	5	30	30
C	Essay Type	2	1	10	10	10
	Total	21	20	--	60	60

28. PROJECT EVALUATION- Regular scheme only

1. Evaluation of the Project Report shall be done under Mark System.
2. The evaluation of the project will be done at two stages :
 - a) Internal Assessment (supervising teachers will assess the project and award internal Marks)
 - b) External evaluation (external examiner appointed by the University)
 - c) Grade for the project will be awarded to candidates, combining the internal and external marks.
3. The internal to external components is to be taken in the ratio 1:4. Assessment of different components may be taken as below:

Internal (20% of total)			External (80% of total)		
Component	% of Marks	Marks	Components	% of Marks	Marks
Originality	20	2	Relevance of the Topic, Statement of Objectives	20	8
Methodology	20	2	Reference, Bibliography/Presentation, quality of Analysis/ Use of Statistical Tools	20	8
Scheme/organization of the report	30	3	Findings and recommendations	30	12
Viva -Voce	30	3	Viva-voce	30	12
Total	--	10		--	40

BA Economics Curriculum: CBCSS 2019

4. External Examiners will be appointed by the University from the list of VI Semester Board of Examiners in consultation with the Chairperson of the Board.
5. The Chairman of the VI semester examination should form and coordinate the evaluation teams and their work.
6. Internal Assessment should be completed 2 weeks before the last working day of VI Semester.
7. Internal Assessment marks should be published in the Department.
8. The Chairman Board of Examinations, may at his discretion, on urgent requirements, make certain exception in the guidelines for the smooth conduct of the evaluation of project.

PASS CONDITIONS

- Submission of the Project Report and presence of the student for viva are compulsory for Internal evaluation. No marks shall be awarded to a candidate if she/ he fails to submit the Project Report for external evaluation.
- The student should get a minimum P Grade in aggregate of External and Internal.
- There shall be no improvement chance for the Marks obtained in the Project Report.
- In the extent of student failing to obtain a minimum of Pass Grade, the project work may be re-done and a new Internal mark may be submitted by the Parent Department. External examination may be conducted along with the subsequent batch.

29. PROJECT GUIDELINES

The Project work may be done either individually or as a group of students not exceeding 5 in number. The topic of the project should be on any economic issues either theoretical or case study type. Please note that Projects using primary data is desirable. The Project work should be completed by the end of the VI semester and a copy of the report (printed or typed in English) should be submitted to the Department. Length of the project report may be 30 to 35 typed pages (Paper A4, Times New Roman, Font size 12, line spacing 1.5). The report may be organized in 4 to 5 chapters. The use of simple statistical tools in data analysis may be encouraged. Project evaluation and the Viva-Voce should be conducted immediately after the completion of the regular classes /written examination. The chairman of the VI semester exam should form and coordinate the evaluation teams and their work. External Examiners will be

appointed by the University from the list of VI semester Board of Examiners in consultation with the Chairman of the Board. Presence of Student for viva-voce is compulsory for internal and external evaluation.

30. Basic contents of a Project Report

Every project report should contain an introductory chapter covering the significance of the study, objectives, methodology, chapter frame and limitation of the study. A detailed review of previous studies forms the second chapter. The third chapter may contain the profile of the study area or sampled unit. In the Fourth chapter, the analysis of the data and the final chapter should be the summary of findings and conclusion. The report should also contain a detailed bibliography and Appendices if any.



AQAR 2020-21

CHEMISTRY

Criterion I - Curricular Aspects

SUB CRITERION -1.2.1 - Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented



UNIVERSITY OF CALICUT

Abstract

General and Academic - Faculty of Science - Syllabus of BSc Chemistry Programme under CBCSS UG Regulations 2019 with effect from 2019 Admission onwards - Implemented - Orders Issued

G & A - IV - J

U.O.No. 9082/2019/Admn

Dated, Calicut University.P.O, 09.07.2019

- Read:-*1. U.O.No. 4368/2019/Admn dated 23.03.2019
2. Item No. 1 of the minutes of the combined meeting of the Boards of Studies in Chemistry UG, Polymer Chemistry and Industrial Chemistry held on 27.05.2019
3. Item No. I.16 of the minutes of the meeting of Faculty of Science held on 27.06.2019

ORDER

The Regulations for Choice Based Credit and Semester System for Under Graduate (UG) Curriculum 2019 (CBCSS UG Regulations 2019) for all UG Programmes under CBCSS-Regular and SDE/Private Registration w.e.f. 2019 admission has been implemented vide paper read first above.

The combined meeting of the Boards of Studies in Chemistry UG, Polymer Chemistry and Industrial Chemistry on 27.05.2019 has approved the Syllabus of BSc Chemistry Programme in tune with the new CBCSS UG Regulations with effect from 2019 Admission onwards, vide paper read second above.

The Faculty of Science at its meeting held on 27.06.2019 has approved the minutes of the combined meeting of the Boards of Studies in Chemistry UG, Polymer Chemistry and Industrial Chemistry on 27.05.2019 vide paper read third above.

Under these circumstances, considering the urgency, the Vice Chancellor has accorded sanction to implement the Scheme and Syllabus of BSc Chemistry Programme in accordance with the new CBCSS UG Regulations 2019, in the University with effect from 2019 Admission onwards, subject to ratification by the Academic Council.

The Scheme and Syllabus of BSc Chemistry Programme in accordance with CBCSS UG Regulations 2019, is therefore implemented in the University with effect from 2019 Admission onwards.

Orders are issued accordingly. (Syllabus appended)

Biju George K

Assistant Registrar

To

The Principals of all Affiliated Colleges

Copy to: PS to VC/PA to PVC/ PA to Registrar/PA to CE/JCE I/JCE IV/DoA/EX and EG Sections/GA I F/CHMK Library/Information Centres/SF/DF/FC

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Section Officer

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SEMESTER VI**Course Code: CHE6B13(E2)****Core Course XIII: Elective 2. POLYMER CHEMISTRY**

Total Hours: 48; Credits: 2; Hours/Week: 3; Total Marks 75 (Internal 15 & External 60)

CHE6B13(E2)	POLYMER CHEMISTRY	L	T	P	C
		3	0	0	2
Objective (s)	To gain detailed knowledge about the classification of polymers and various mechanisms and technology adopted for polymerisation. To give a basic understanding of the properties of polymers like glass transition temperature, molecular weight and degradation of polymers. To give a detailed idea about different commercial polymers.				
Course outcome (s)					
CO1	To understand various classification of polymers and types of polymerisation methods.				
CO2	To understand the important characteristics of polymers such as average molecular weight, glass transition temperature, viscoelasticity and degradation.				
CO3	To appreciate the importance of processing techniques.				
CO4	To characterise different commercial polymers and to understand the significance of recycling.				

Module I: Introduction (4 hrs)

Polymers and macromolecules – Monomers – Homo and hetero polymers – Copolymers – Classification based on origin (natural, semi synthetic and synthetic), synthesis (addition and condensation), structure (linear, branched chain and cross linked) and intermolecular forces (elastomers, fibres, thermoplastics and thermosetting polymers) – Tacticity.

Module II: Types of Polymerisation (10 hrs)

Chain and step growth polymerizations – Free radical, ionic and coordination polymerizations with mechanism – Zeigler-Natta polymerization (mechanism expected) and its advantages – Ring-opening & group transfer polymerization (Mechanism not needed).

Module III: Properties and Degradation of Polymers (10 hrs)

Molecular weights of polymers: Average molecular weights – Number average, Weight average, Sedimentation average (Method of determination not required) and Viscosity average molecular weight – determination of viscosity average molecular weight; Poly

dispersity index and molecular weight distribution; Molecular weight and Degree of polymerization.

Glass transition temperature – definition, factors affecting T_g, importance of T_g.

Visco elasticity of polymers (Basic concepts only).

Polymer Degradation: Basic idea of thermal, photo and oxidative degradations of polymers.

Module IV: Polymerisation Techniques (6 hrs)

Polymerisation Techniques: Bulk, solution, suspension, emulsion, melt condensation and interfacial polycondensation polymerizations.

Module V: Polymer Processing (6)

Calendering, rotational moulding, compression, injection moulding, blow moulding and thermoforming.

Module VI: Commercial Polymers (12 hrs)

Preparation, Structure, properties and applications of: Polyolefins (HDPE, LDPE, PP and PS); Vinyl polymers (PVC, PVP and EVA, Saran); fluoro polymers (Teflon); Acrylic polymers (PAN and PMMA); Aliphatic polyamides (nylon 66 and nylon 6); Aromatic polyamides (kevlar); Polyester (terylene); Polycarbonate (lexan); Polyurethanes; Resins- Glyptal and formaldehyde resins (UF, MF and PF); Rubbers (natural rubber - Vulcanisation, EPDM, BR, SBR, nitrile rubber, Neoprene, Butyl rubber and silicone rubber); Conducting polymers - Dopping (conduction mechanism not required).

Pollution due to plastics – Recycling of plastics - Plastic identification codes.

References

1. F. W. Billmeyer Jr., *Textbook of Polymer Science*, John Wiley and Sons, New Delhi, 2007.
2. V. R. Gowarikar, *Polymer Chemistry*, New Age International Pvt. Ltd., New Delhi, 2010.
3. B. K. Sharma, *Polymer Chemistry*, Goel Publishing House, Meerut, 1989.
4. M. G. Arora, M. Singh, M. S. Yadav, *Polymer Chemistry*, 2nd Revised Edn., Anmolpublications Private Ltd., New Delhi, 1989.
5. K. J. Saunders, *Organic Polymer Chemistry*, 2nd Edn., Chapman and Hall, London, 1988.
6. Malcolm P. Stevens, *Polymer Chemistry: An Introduction*, 3rd Edn., Oxford University Press, USA, 1998.
7. Gowri Sankar Misra, *Introductory Polymer Chemistry*, New Age International, New Delhi, 1993.
8. M. S. Bhatnagar, *Polymer Chemistry*, S Chand and Company Pvt. Ltd., New Delhi, 2014 (Reprint).

Further reading

1. R. B. Seymour, C. E. Carraher, *Polymer Chemistry: An Introduction*, Marcel Dekker, Inc. New York, 1981.
2. G. Odian, *Principles of Polymerization*, 4th Edn., Wiley, 2004.
3. P. Ghosh, *Polymer Science & Technology*, Tata McGraw-Hill Education, 1991.
4. R. W. Lenz, *Organic Chemistry of Synthetic High Polymers*, Interscience Publishers, New York, 1967.
5. M. P. Stevens, *Polymer Chemistry: An Introduction*, 3rd Edn., Oxford University Press, 2005.

Mark Distribution	
Module I	4 Marks
Module II	16 Marks
Module III	17 Marks
Module IV	12 Marks
Module V	10 Marks
Module VI	20 Marks

SEMESTER V**Course Code: CHE5D01****Open Course 1: ENVIRONMENTAL CHEMISTRY**

Total Hours: 48; Credits: 3; Hours/Week: 3; Total Marks 75 (Internal 15 & External 60)

Course outcomes

At the end of the course, students will be able to:

CO 1: Recall the technical/scientific terms involved in pollution.

CO 2: Understand the causes and effects of air pollution.

CO 3: Understand the sources, types and effects of water pollution.

CO 4: Describe water quality parameters.

CO 5: Know soil, noise, thermal and radioactive pollutions and their effects.

CO 6: Study various pollution control measures.

CO 7: Understand the basics of green chemistry.

Module I: Introduction to Environment and Environmental pollution (4 hrs)

Environmental chemistry - introduction, Environmental segments – Lithosphere: components of soils, Hydrosphere: water resources, Biosphere, Atmosphere - regions of atmosphere – Troposphere, stratosphere, mesosphere, thermosphere.

Environmental pollution – Concepts and definition – Pollutant, contaminant, receptor and sink – Classification of pollutants – Global, regional, local, persistent and non-persistent pollutants.

References

1. A. K. De, *Environmental Chemistry*, 7th Edn., New Age International, 2012.
2. A. K. Ahluwalia, *Environmental Chemistry*, The Energy and Resources Institute, 2017.
3. Balram Pani, *Textbook of Environmental Chemistry*, I. K. International Pvt Ltd, 2010.

Module II: Air Pollution (8 hrs)

Tropospheric pollution – Gaseous air pollutants – Hydrocarbons, oxides of sulphur, nitrogen and carbon – Global warming, green house effect, acid rain – Particulates – Smog: London smog and photochemical smog – effects and control of photochemical smog – stratospheric pollution - depletion of ozone layer, chlorofluorocarbons - Automobile pollution. Control of air pollution – Alternate refrigerants – Bhopal Tragedy (a brief study). Air pollution in Indian cities (Delhi, Agra and Kanpur).

References

1. S. K. Banergy, *Environmental Chemistry*, 2nd Edn., Prentice-Hall of India Pvt. Ltd., New Delhi, 2005.
2. V. N. Bashkin, *Environmental Chemistry: Asian Lessons*, Springer Science & Business Media, 2003.
3. S. E. Manahan, *Environmental Chemistry*, 8th Edn., CRC Press, Florida, 2004.
4. A. K. Ahluwalia, *Environmental Chemistry*, The Energy and Resources Institute, 2017.
5. Balram Pani, *Textbook of Environmental Chemistry*, I. K. International Pvt. Ltd., 2010.

Module III: Water Pollution (10 hrs)

Impurities in water – cause of pollution – natural and anthropogenic – Marine water pollution – Underground water pollution.

Source of water pollution – Industrial waste, Municipal waste, Agricultural waste, Radioactive waste, Petroleum, Pharmaceutical, heavy metal, pesticides, soaps and detergents.

Types of water pollutants: Biological agents, physical agents and chemical agents – Eutrophication - biomagnification and bioaccumulation.

Water quality parameters: DO, BOD, COD, alkalinity, hardness, chloride, fluoride and nitrate. Toxic metals in water and their effects: Cadmium, lead and mercury – Minamata disaster (a brief study), itai-itai disease, oil pollution in water. International standards for drinking water.

References

1. S. K. Banergy, *Environmental Chemistry*, 2nd Edn., Prentice-Hall of India Pvt. Ltd., New Delhi, 2005.
2. J. M. H. Selendy, *Water and Sanitation-Related Diseases and the Changing Environment*, John Wiley & Sons, 2011.
3. P. K. Goel, *Water Pollution: Causes, Effects and Control*, New Age International, 2006.
4. V. N. Bashkin, *Environmental Chemistry: Asian Lessons*, Springer Science & Business Media, 2003.
5. S. E. Manahan, *Environmental Chemistry*, 8th Edn., CRC Press, Florida, 2004.
6. A. K. Ahluwalia, *Environmental Chemistry*, The Energy and Resources Institute, 2017.
7. Balram Pani, *Textbook of Environmental Chemistry*, I. K. International Pvt. Ltd., 2010.

Module IV: Soil, Noise, Thermal, light and Radioactive Pollutions (8 hrs)

Soil pollution: Sources by industrial and urban wastes. Pollution due to plastics, pesticides, biomedical waste and e-waste (source, effects and control measures) – Control of soil

pollution - Solid waste Management – Open dumping, landfilling, incineration, re-use, reclamation, recycle, composting.

Non-degradable, degradable and biodegradable wastes. Hazardous waste.

Noise Pollution – physiological response to noise, Noise categories - effect of noise – biological effects.

Thermal pollution – definition, sources, harmful effects and prevention. Light pollution.

Radioactive pollution (source, effects and control measures) – Hiroshima, Nagasaki and Chernobyl accidents (brief study). Endosulfan disaster in Kerala (brief study).

References

1. S. E. Manahan, *Environmental Chemistry*, 8th Edn., CRC Press, Florida, 2004.
2. A. K. Ahluwalia, *Environmental Chemistry*, The Energy and Resources Institute, 2017.
3. A. K. De, *Environmental Chemistry*, 6th Edn., New Age International.
4. Balram Pani, *Textbook of Environmental Chemistry*, I. K. International Pvt. Ltd., 2010.
5. Anindita Basak, *Environmental Studies*, Pearson Education India, 2009.
6. Pallavi Saxena, Vaishali Naik, *Air Pollution: Sources, Impacts and Controls*, CAB International, 2018.

Module V: Pollution Control Measures (12 hrs)

Air pollution control measures – Gravitational settling chamber, fabric filter, wet scrubber, catalytic converters, stacks and chimneys, cyclone collectors, Cottrell electrostatic precipitator, extraction ventilator, zoning and green belt.

References

1. N. P. Cheremisinoff, *Handbook of Air Pollution Prevention and Control*, 2002.
2. M. Senapati, *Advanced Engineering Chemistry*, 2006.
3. K. C. Schiffner, *Air Pollution Control Equipment Selection Guide*, CRC Press, 2013.
4. K. B. Schnelle, C. A. Brown, *Air Pollution Control Technology Handbook*, CRC Press, 2016.

Module VI: Green Chemistry (6 hrs)

Introduction- Definition of green Chemistry, need of green chemistry, basic principles of green chemistry. Applications of green chemistry in daily life.

References

1. V.K. Ahluwalia, M. Kidwai, *New Trends in Green Chemistry*, Springer Science & Business Media, 2012.
2. M. Lancaster, *Green Chemistry: An Introductory Text*, Royal Society of Chemistry, 2010.
3. S. C. Ameta, R. Ameta, *Green Chemistry: Fundamentals and Applications*, CRC Press,

2013.

Scheme of Examinations:

The external question paper carries 60 marks and internal examination is of 15 marks. Duration of each external examination is 2 Hrs. The pattern of External Examination is as given below:

Section A

Short answer type carries 2 marks each – 12 questions Ceiling – 20

Section B

Paragraph/ Problem type carries 5 marks each – 7 questions Ceiling – 30

Section C

Essay type carries 10 marks (1 out of 2) 1x10=10

The students can answer all the questions in sections A & B but there shall be ceiling.

Mark Distribution	
Module I	9 Marks
Module II	14 Marks
Module III	18 Marks
Module IV	14 Marks
Module V	16 Marks
Module VI	8 Marks



UNIVERSITY OF CALICUT

Abstract

General and Academic - Faculty of Science - Syllabus of MSc Chemistry Programme for affiliated colleges under CBCSS PG Regulations 2019 with effect from 2019 Admission onwards - Implemented- Orders Issued

G & A - IV - J

U.O.No. 8957/2019/Admn

Dated, Calicut University.P.O, 06.07.2019

*Read:-*1. U.O.No. 4487/2019/Admn dated 26.03.2019

2. Item No. 2 in the minutes of the meeting of the Board of Studies in Chemistry (PG) held on 12.06.2019

3. Item No. 1.13 in the minutes of the meeting of Faculty of Science held on 27.06.2019

ORDER

The Regulations for Choice Based Credit and Semester System for Post Graduate (PG) Curriculum-2019 (CBCSS PG Regulations 2019) for all PG Programmes under CBCSS for Affiliated Colleges and SDE/PrivateRegistration w.e.f. 2019 admission has been implemented vide paper read first above.

The meeting of Board of Studies in Chemistry (PG) held on 12/06/2019 has approved the Syllabus of MSc Chemistry Programme in tune with the new CBCSS PG Regulations with effect from 2019 Admission onwards, vide paper read second above.

The Faculty of Science at its meeting held on 27/06/2019 has approved the minutes of the meeting of the Board of Studies in Chemistry (PG) held on 12/06/2019, vide paper read third above.

Under these circumstances, considering the urgency, the Vice Chancellor has accorded sanction to implement the Scheme and Syllabus of MSc Chemistry Programme in accordance with new CBCSS PG Regulations 2019, for affiliated colleges in the University with effect from 2019 Admission onwards, subject to ratification by the Academic Council.

The Scheme and Syllabus of M Sc Chemistry Programme for affiliated colleges in accordance with CBCSS PG Regulations 2019, is therefore implemented in the University with effect from 2019 Admission onwards.

Orders are issued accordingly. (Syllabus appended)

Biju George K

Assistant Registrar

To

The Principals of all Affiliated Colleges

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Section Officer

UNIVERSITY OF CALICUT
M.Sc. CHEMISTRY (CBCSS PATTERN)

Regulations and Syllabus with effect from 2019 admission

The Board of Studies in Chemistry (PG) at its meeting held on 15-05-2019 considered the revision of M.Sc. Chemistry syllabus under Credit Semester System (CBCSS) and resolved to implement the revised syllabus from 2019 admission onwards. The revised programme pattern; syllabus, distribution of credits and scheme of evaluation, etc. approved by the Board of studies in Chemistry (PG) at its meeting held on **12-06-2019** are given below:

The pattern of the Programme

- a) The name of the programme shall be **M.Sc. Chemistry under CBCSS pattern**.
- b) The programme shall be offered in four semesters within a period of two academic years.
- c) Eligibility for admission will be as per the rules laid down by the University from time to time.
- d) Details of the programme offered are given in Table 1. The programme shall be conducted in accordance with the programme pattern, the scheme of examination and syllabus prescribed. Of the 25 hours per week, 13 hours shall be allotted for theory and 12 hours for practicals. 1 theory hour per week during even semesters shall be allotted for the seminar.

Theory Courses

In the first three semesters there will be **four** theory courses and in the fourth semester **three** theory courses. All the theory courses in the first and second semesters are core courses. In the third semester, there will be three core theory courses and one elective theory course. Colleges can choose any one of the elective courses given in **table 1**. In the fourth semester, there will be one core theory course and two elective theory courses. Colleges can select any two of the elective courses from those given in table 1. However, a student may be permitted to choose any other elective course of his choice in the third and fourth semesters, without having any lecture classes. Of all the elective courses, one elective course in the third semester and two elective courses for the fourth semester chosen by the college only will be considered for calculating the workload of teachers. All the theory courses in the first, third and fourth semesters (both core and elective) are of 4 credits while the theory courses (both core and elective) in the second semester are of 3credits.

Practical Courses

In each semester, there will be three core practical courses. However, the practical

examinations will be conducted only at the end of the second and fourth semesters. At the end of the second semester, three practical examinations with the codes CHE1L01 & CHE2L04, CHE1L02 & CHE2L05, and CHE1L03 & CHE2L06 will be conducted. Practical examinations for the codes CHE3L07 & CHE4L10, CHE3L08 & CHE4L11, and CHE3L09 & CHE4L12 will be conducted at the end of the fourth semester. **Each practical examination will be of six-hour duration with 3 credits. Three hours per week in the fourth semester are allotted for conducting individual project work by the students under the guidance of a faculty and it can be treated as practical hours while calculating the workload of teachers.**

Project and Viva-Voce

Each student has to perform an independent research project work during the programme under the guidance of a faculty member of the college/ scientists or faculties of recognized research institutions. Projects done in the quality control or quality analysis division of the industries will not be considered. At the same time, projects done in the R & D division of the reputed industry can be considered. Each student has to submit three copies of the project dissertation for valuation at the end of the fourth semester. After the valuation one copy may be returned to the student, one may be given to the project supervisor and the third one should be kept in the department/college library. **Evaluation of the project work (4 credits) will be done on a separate day at the end of the fourth semester, after the theory examinations. Viva-voce on the project will also be done on the same day.**

A comprehensive viva voce examination (2credits), based on all the theory and practical courses, will be conducted at the end of the fourth semester, on a separate day.

Grading and Evaluation

- (1) **Accumulated minimum credit required for successful completion of the programme shall be 80.**
- (2) A project work of 4 credits is compulsory and it should be done during the programme. 3 hours per week are allotted the IV semester, for carrying out the project work. **Project evaluation should be conducted by three external examiners, one each from inorganic chemistry, organic chemistry and physical chemistry area, at the end of the fourth semester, on a separate day.**
- (3) **Also, a comprehensive Viva Voce Examination (carrying 2 credits) may be conducted by three external examiners, one each from inorganic chemistry, organic chemistry and physical chemistry area, at the end of the fourth semester on a separate day.**
- (4) Evaluation and Grading should be done by the direct grading system. All grading during the evaluation of courses and the semester is done on a 6-point scale (A+, A, B, C, D, E). Grading in the 6-point scale is as given below.

TABLE 1
Courses offered for M.Sc. Chemistry Programme under
CBCSS Pattern in Affiliated Colleges (2019 onwards)

Semester	Course Code	Course Title	Instruction/ Week	Credits
I	CHE1C01	Quantum Mechanics and Computational Chemistry	4	4
	CHE1C02	Elementary inorganic chemistry	3	4
	CHE1C03	Structure and reactivity of organic Compounds	3	4
	CHE1C04	Thermodynamics, kinetics, and catalysis	3	4
	CHE1L01	Inorganic chemistry practical I	4	-
	CHE1L02	Organic chemistry Practical I	4	-
	CHE1L03	Physical chemistry practical I	4	-
		Total credits:	Core	16
II	CHE2C05	Group theory and Chemical Bonding	3	3
	CHE2C06	Coordination chemistry	3	3
	CHE2C07	Reaction mechanism in Organic Chemistry	3	3
	CHE2C08	Electrochemistry, solid state chemistry, and Statistical Thermodynamics	3	3
	CHE2L04	Inorganic chemistry practical II	4	3
	CHE2L05	Organic chemistry practical II	4	3
	CHE2L06	Physical chemistry practical II	4	3
		Total credits:	Core	21
	CHE3C09	Molecular spectroscopy	4	4
	CHE3C10	Organometallic & Bioinorganic chemistry	3	4
	CHE3C11	Reagents and Transformations in Organic Chemistry	3	4

III	CHE3L07	Inorganic chemistry practical III	4		
	CHE3L08	Organic chemistry practical III	4		
	CHE3L09	Physical chemistry practical III	4		
	CHE3E01	Synthetic organic chemistry(Elective)	3	4	
	CHE3E02	Computational chemistry(Elective)	3	4	
	CHE3E03	Green and Nanochemistry(Elective)	3	4	
		Total Credits:		Core Elective	12 4
IV	CHE4C12	Instrumental Methods of Analysis	4	4	
	CHE4L10	Inorganic Chemistry Practical IV	3	3	
	CHE4L11	Organic Chemistry Practical IV	3	3	
	CHE4L12	Physical Chemistry Practical IV	3	3	
	CHE4E04	Petrochemicals and Cosmetics(Elective)	4	4	
	CHE4E05	Industrial Catalysis(Elective)	4	4	
	CHE4E06	Natural products & Polymer Chemistry (Elective)	4	4	
	CHE4E07	Material Science(Elective)	4	4	
	CHE4E08	Organometallic Chemistry	4	4	
	CHE4P01	Research Project	3	4	
	CHE4V01	Viva Voce		2	
		Total Credits:		Core Elective Project Viva	13 8 4 2
	TOTAL CREDITS OF THE PROGRAMME :				
	CORE ELECTIVE				62 12

UNIVERSITY OF CALICUT
M.Sc. CHEMISTRY (CSS PATTERN) - SEMESTER III
CHE3E03- GREEN AND NANOCHEMISTRY (ELECTIVE)

(4credits, 54 h)

Unit I: Introduction to green chemistry (9h)

Green chemistry-relevance and goals, Anastas' twelve principles of green chemistry - Tools of green chemistry: alternative starting materials, reagents, catalysts, solvents and processes with suitable examples.

UNIT-2: Microwave mediated organic synthesis (MAOS) (9h)

Microwave activation, advantage of microwave exposure, specific effects of microwave – Neat reactions, solid supports reactions, Functional group transformations, condensations reactions, oxidations – reductions reactions, multi-component reactions.

Unit 3: Alternative synthesis, reagents and reaction conditions (9h)

Introduction, synthesis of ionic liquids, physical properties, applications in alkylation – hydroformylations, epoxidations, synthesis of ethers, Friedel-craft reactions, Diels-Alder reactions, Knoevenagel condensations, Wittig reactions, Phase transfer catalyst - Synthesis – applications. A photochemical alternative to Friedel-crafts reactions - Dimethyl carbonate as a methylating agent – the design and applications of green oxidants – super critical carbon dioxide for synthetic chemistry.

Unit 4: Nanomaterials – An Introduction & Synthetic Methods (9h)

Definition of nano dimensional materials - Historical milestones - unique properties due to nanosize, Quantum dots, Classification of Nanomaterials. General methods of synthesis of nanomaterials – Hydrothermal synthesis, Solvothermal synthesis, Microwave irradiation, sol – gel and Precipitation technologies, Combustion Flame-Chemical Vapor Condensation Process, gas Phase Condensation Synthesis, Reverse Micelle Synthesis, Polymer – Mediated Synthesis, Protein Microtube – Mediated Synthesis. Synthesis of Nanomaterials using microorganisms and other biological agents, Sonochemical Synthesis, Hydrodynamic Cavitation. Inorganic nanomaterials – Typical examples – nano TiO₂ / ZnO/CdO/CdS, Organic nanomaterials – examples – Rotaxanes and Catenanes

Unit 5: Techniques for Characterisation of nanoscale materials (9h)

Principles of Atomic force microscopy (AFM), Transmission electron microscopy (TEM)- Resolution and scanning transition electron microscopy (STEM), Scanning Tunneling Microscopy (STM), Scanning near field optical microscopy (SNOM), Scanning ion

conductance microscope, scanning thermal microscope, scanning probe microscopes and surface plasmon spectroscopy.

Unit 6: Carbon Clusters and Nanostructures (9h)

Nature of carbon bond, new carbon structures. Carbon clusters: Discovery of C₆₀, Alkali doped C₆₀, Superconductivity in C₆₀, Larger and smaller fullerenes. Carbon nanotubes: Synthesis, Single walled carbon nanotubes, Structure and characterization, Mechanism of formation. Chemically modified carbon nanotubes, Doping - Functionalizing nanotubes. Application of carbon nanotubes. Nanowires: Synthetic strategies, Gas phase and solution phase growth, Growth control - Properties.

References:

For Units 1, 2 & 3

1. V. K. Ahluwalia, *Green Chemistry – Environmentally benign reactions*, AneBooks India (Publisher), (2006).
2. V. K. Ahluwalia, *Green Chemistry: A Textbook*, Narosa Publishing House, 2013.
3. *Green Chemistry – Designing Chemistry for the Environment* – edited by Paul T. Anastas & Tracy C. Williamson. Second Edition, (1998).
4. *Green Chemistry–Frontiers in benign chemicals synthesis and processes*-edited by Paul T. Anastas & Tracy C. Williamson. Oxford University Press, (1998).
5. *Green Chemistry – Environment friendly alternatives*- edited by Rashmi Sanghi & M. M. Srivastava, Narora Publishing House, (2003).

For Units 4, 5 & 6

1. C.N.R. Rao, A. Muller, A.K. Cheetam (Eds), *The Chemistry of Nanomaterials*, Vol.1, 2, Wiley –VCH, Weinheim, 2004.
2. C.P. Poole, Jr; F.J. Owens, *Introduction to Nanotechnology* Wiley Interscience, New Jersey, 2003
3. Kenneth J. Klabunde (Ed), *Nanoscale materials in Chemistry*, Wiley- Interscience, New York, 2001.
4. T. Pradeep, *Nano: The Essentials in understanding nanoscience and nanotechnology*, Tata McGraw Hill, New Delhi, 2007.
5. H. Fujita (Ed.), *Micromachines as tools in nanotechnology*, Springer- Verlag, Berlin, 2003.
6. Bengt Nolting, *Methods in modern biophysics*, Springer-Verlag, Berlin, First Indian Reprint, 2004. (Pages 102-146 for Unit II and 147 – 163 for UnitV)
7. H. Gleiter, *Nanostructured Materials: Basic Concepts, Microstructure and Properties*
8. W. Kain and B. Schwederski, *Bioinorganic Chemistry: Inorganic Elements in the Chemistry of Life*, John-Wiley R Sons, New York.
9. T. Tang and p. Sheng (Eds), *Nano Science and Technology Novel Structures*

and Phenomena,

Taylor & Francis, New York, 2004.

10. A. Nabok, *Organic and Inorganic Nanostructures*, Artech House, Boston, 2005.

11. Edward A. Rietman, *Molecular engineering of Nanosystems*, Springer-Verlag, New York, 2001.

12. Home page of Prof. Ned Seeman - <http://seemanlab4.chem.nyu.edu/>

Nano letters - <http://pubs.acs.org/journals/nalefd/index.html>

Nanotation -

<http://www.acsnanotation.org/>

UNIVERSITY OF CALICUT
M.Sc. CHEMISTRY (CSS PATTERN) - SEMESTER IV
CHE4E05 - INDUSTRIAL CATALYSIS (ELECTIVE) (4 Credits, 72h)

Unit 1: Introduction to Adsorption process (9h)

Intermolecular interactions, physisorption. The forces of adsorption. Dispersion and repulsive forces. Classical electrostatic interactions. Adsorbate-adsorbate interactions, chemisorption, potential energy curves, thermodynamics of adsorption. Isothermal and adiabatic heats of adsorption. Variation of heats of adsorption with coverage. Adsorption isotherms, Langmuir, BET and Freundlich. Kinetics of chemisorptions. Activated and non-activated chemisorptions. Absolute rate theory. Electronic theories. Hysteresis and shapes of capillaries.

Unit 2: Kinetics and Catalysis (9h)

Adsorption and catalysis. Adsorption and reaction rate. Strength of adsorption bond and catalysis. Adsorption equilibrium and catalysis. Kinetics of heterogeneous catalysis: diffusion steps neglected. Unimolecular reactions. Bimolecular reactions. Langmuir-Hinshelwood and Eley-Rideal mechanism. Kinetics of heterogeneous catalysis: diffusion controlling. Mechanism of diffusion. Diffusion and reaction in pores. Selectivity and diffusion. Electronic factors in catalysis by metals, electronic factors in catalysis by semiconductors, geometric factors and catalysis.

References:

1. A. Clark, "*Theory of adsorption and catalysis*", Academic Press, 1970.
2. J.M. Thomas & W.J. Thomas, "*Introduction to principles of heterogeneous catalysis*", Academic Press, New York, 1967.
3. R.H.P. Gasser, "*An introduction to chemisorption and catalysis by metals*", Oxford, 1985.
4. D.K Chakraborty, "*Adsorption and catalysis by solids*", Wiley Eastern Ltd. 1990.

Unit 3: Catalyst - Preparative Methods (9h)

Surface area and porosity measurement. Measurement of acidity of surfaces. Support materials. Preparation and structure of supports. Surface properties. Preparation of catalysts. Introduction of precursor compound. Pre-activation treatment. Activation process. General methods of synthesis of zeolites. Mechanism of nuclear formation and crystal growth. Structures of some selected zeolites. Zeolites A, X and Y. Pentasils. ZSM-5. ZSM-11. Shape selective catalysis by zeolites.

Unit 4: Deactivation of Catalysts (9h)

Deactivation of catalysts. Classification of catalyst deactivation processes. Poisoning of catalysts. Coke formation on catalysts. Metal deposition on catalysts. Sintering of catalysts. Regeneration of deactivated catalysts. Feasibility of regeneration. Description of coke deposit and kinetics of regeneration.

References:

1. J.R. Anderson and M. Boudart (Eds), "*Catalysis, Science and Technology*", Vol 6, Springer- Verlag, Berlin Heidelberg, 1984.
2. R.B. Anderson, "*Experimental methods in catalysis research*", Vol I, II, Academic press, NY, 1981.
3. R. Szostak, "*Molecular sieves: principles of synthesis and identification*", Van Nostrand, NY, 1989.
4. R. Hughes, "*Deactivation of catalysts*", Academic press, London, 1984.

UNIT 5: Phase Transfer Catalysis (9h)

Basic concepts in phase transfer catalysis. Phase transfer catalyzed reactions. Basic steps of phase transfer catalysis. Effect of reaction variables on transfer and intrinsic rates. Outline of compounds used as phase transfer catalysts. Use of quaternary salts. Macrocyclic and macrobicyclic ligands. PEG's and related compounds. Use of dual phase transfer catalyst or co-catalyst in phase transfer systems. Separation and recovery of phase transfer catalysts. Insoluble phase transfer catalysts.

UNIT 6: Biocatalysis (9h)

Enzymes. An introduction to enzymes. Enzymes as proteins. Classification and nomenclature of enzymes. Structure of enzymes. How enzymes work. Effect on reaction rate. Thermodynamic definitions. Catalytic power and specificity of enzymes. Optimization of weak interactions between enzyme and substrate in the transition state. Binding energy, reaction specificity and catalysis. Specific catalytic groups contributing to catalysis. Immobilized biocatalysts. Definition and classification of immobilized biocatalysts. Immobilization of coenzymes.

References:

1. C.M. Starks, C.L. Liotta and M. Halpern, "*Phase Transfer Catalysis – Fundamentals, Applications and Industrial Perspectives*", Chapman & Hall, New York, 1994.
2. A.L. Lehninger, "*Principles of Biochemistry*", Worth Publishers, USA, 1987.

UNIT 7: Industrial Catalysis-1 (9h)

Oil based chemistry. Catalytic reforming. Catalytic cracking. Paraffin cracking. Naphthenic cracking. Aromatic hydrocarbon cracking. Isomerization. Hydrotreatment.

Hydrodesulphurization. Hydrocracking. Steam cracking. Hydrocarbons from synthesis gas. Fisher-Tropsch process. Mobil process for conversion of methanol to gasoline hydrocarbons. Catalysis for environmental protection, removal of pollutants from exhausts, mobile and static sources.

UNIT 8: Industrial Catalysis-II (9h)

Hydroformylation of olefins. Carbonylation of organic substrates. Conversion of methanol to acetic acid. Synthesis of vinyl acetate and acetic anhydride. Palladium catalyzed oxidation of ethylene. Acrylonitrile synthesis. Zeigler-Natta catalysts for olefin polymerization. Propene polymerization with silica supported metallocene/MAO catalysts.

References:

1. G. Ertl, H. Knozinger and J. Weitkamp, "*Handbook of Heterogeneous Catalysis*" Vol 1-5, Wiley-VCH, Weinheim, 1997.
2. R.J. Farrauto and C.H. Bartholomew, "*Fundamentals of Industrial Catalytic Processes*", Blackie Academic and Professional – Chapman and Hall, 1997.
3. R. Pearce and W.R. Patterson, "*Catalysis and chemical processes*", Academic press, Leonard Hill, London, 1981.

UNIVERSITY OF CALICUT

M.Sc. CHEMISTRY (CSS PATTERN) - SEMESTER IV

CHE4E08 – ORGANOMETALLIC CHEMISTRY (ELECTIVE) (4 credits, 72h)

UNIT I (9h)

Organometallic compounds. Classification and nomenclature. The 16 and 18 electron rules. Electron counting-covalent and ionic models. Main group organometallics-alkyl and aryl, groups 1, 2, 12, 13, 14 and 15 synthesis, structure and applications. Transition metal to carbon multiple bond-the metal carbenes and carbynes. Transition metal complexes with chain π ligands – synthesis, structure, bonding and reactions of complexes of ethylene, allyl, butadiene and acetylene.

UNIT II (9h)

Metal carbonyls- Bonding modes of CO. IR spectroscopy as a tool to study bonding and structure of metal carbonyls. Synthesis of Metal carbonyls, Direct and reductive Carbonylation. Reactions of Metal carbonyls-Activation of metal carbonyls, Disproportion, Nucleophilic addition, electrophilic addition to the carbonyl oxygen, Carbonyl cation, anions and hydrides. Collmann's reagent, Migratory insertion of carbonyls. Oxidative decarbonylation. Photochemical substitution. Microwave assisted substitution.

UNIT III (9h)

General aspects of synthesis. Structure, reactivity and applications of main group organometallic compounds. Metal complexes of NO, H₂, CS, RNC and Phosphines. Metal-carbon multiple bonds - Metal carbenes and carbynes, bridging carbenes and carbynes, N-heterocyclic carbons, multiple bonds to hetero atoms.

UNIT IV (9h)

Organometallic π complexes – synthesis, structure, bonding (molecular orbital treatment) and reactions of C₅H₅, C₆H₆, C₇H₇ and C₈H₈⁻². Polyalkyls, polyhydrides and f-block organometallic complexes, Fluxional organometallics.

UNIT V (9h)

Applications of organometallic compounds in organic synthesis and homogeneous catalysis, Complex formation and activation of H₂, N₂, O₂, NO by transition metals. Catalytic steps, Oxidative addition, reductive elimination and insertion reactions. Hydrozirconation of alkenes and alkynes. Homogeneous catalysis. Hydrogenation, isomerization of alkenes, alkyne, cycloadditions, Zeigler-Natta catalysis, hydroformylation of alkenes, Monsanto acetic acid process and Wacker process. Metal complexes in enantioselective synthesis

UNIT VI (9h)

Organometallic reactions. SN² Reactions, Radical Mechanisms, Ionic Mechanisms, σ -Bond Metathesis, Oxidative Coupling and Reductive decoupling. Reactions involving CO, Insertions

Involving Alkenes, Other Insertions, α , β , γ and δ Elimination, Deinsertion and Nucleophilic and electrophilic attack on coordinated ligand.

UNIT VII (9h)

Applications of organometallic reaction. Homogeneous catalysis. General features of catalysis. Types of catalyst. Catalytic steps. Water-gas shift reaction. Fisher-Tropsch reaction. Hydrosilation of alkenes. Hydrocyanation of alkenes.

UNIT VIII (9h)

Organometallic Polymers. Polymers with organometallic moieties as pendant groups. Polymers with organometallic moieties in the main chain. Condensation polymers based on ferrocene and on rigid rod polyynes, poly (ferrocenylsilane)s, applications of oly(ferrocenylsilane)s and related polymers. Applications of rigid-rod polyynes, polygermanes and polystannanes. Polymers prepared by ring opening polymerization. Organometallic dendrimers.

References:

1. B. D. Gupta, A .J. Elias, Basic Organometallic Chemistry - Concepts, Synthesis and Applications, Second edition, University Press, 2013.
2. R. H. Crabtree, The Organometallic Chemistry of the Transition Metals, Fourth edn. 2005, Wiley Interscience.
3. J. E. Huheey, Inorganic Chemistry – Principles of Structure and Reactivity, 4th edition, Pearson education, 1993.
4. F.A. Cotton and G. Wilkinson, Advanced Inorganic Chemistry. 5th edition, John and Wiley, 1999.
5. R.S. Drago. Physical Methods in Inorganic Chemistry, 2nd edition, affiliated east west press, 1993.
6. P. Powell, Principles of Organometallic Chemistry, 2nd edition, Chapman and Hall, London, 1998.
7. S. F. A. Kettle, Concise co-ordination chemistry, Nelson, 1969.
8. S. F. A. Kettle, Physical Inorganic Chemistry-A Co-ordination chemistry Approach, Spectrum academy publishers, 1996.
9. Purcell and Kotz, Inorganic Chemistry. 10. D. J. Shriver, P. W. Atkins, Inorganic Chemistry, 5th edition, Oxford university press, 2010.

21/11/05

4784

UNIVERSITY OF CALCUTTA
(Abstract)

Affiliation - Permanent B.Sc. Chemistry degree course in Sacred Heart College, Chakkkudy, Thiruvananthapuram - Orders issued

GENERAL AND AC'ADMIC BRANCH I
Date: Calcutta University P.O. 19.04.2005.

- Read:
1. U.O.No.GAID/3707997(Q) dated 12/11/98
 2. U.O.of order No. dated 27/10/99, 8/12/001 & 28/4/2001 & 19-4-2005.
 3. U.O. of order No. dated 30/10/2003 & 10/12/2003
 4. Letter No.A1-1/98 dated 5/12/2003 from the Principal, Sacred Heart College, Chakkkudy, Thiruvananthapuram.
 5. Minutes of the meeting of the Syndicate held on 16/11/2004, Item No.2004-401 (confirmed vide Item No.2004-532 on 2/12/2004).

ORDER

Provisional affilitions granted for awarding B.Sc. Polymer Chemistry degree course in Sacred Heart College, Chakkkudy, Thiruvananthapuram during the academic year 1998-99 with an intake of 20 students and University Order's read on first and second papers. Sanction has been accorded for the change of the degree course from B.Sc. Polymer Chemistry to B.Sc. Chemistry as per U.O read as third paper.

2. The Principal, Sacred Heart College, Chakkkudy, Thiruvananthapuram had requested to grant permanent affiliation for B.Sc. Chemistry degree course as per the letter read as fourth paper. Accordingly, an Inspection Commission was appointed for verifying the facilities available in the college. The Commission visited the college and submitted the report.

3. Syndicate at its meeting held on 16/11/2004 vide Item No.2004-401 (confirmed vide Item No.2004-532 on 2/12/2004) considered the question of granting permanent affiliation for B.Sc. Chemistry degree course in Sacred Heart College, Chakkkudy, Thiruvananthapuram on the basis of the Inspection Commission report and resolved to grant permanent affiliation for B.Sc. Chemistry degree course in Sacred Heart College, Chakkkudy, Thiruvananthapuram.
4. The Principal, Sacred Heart College, Chakkkudy, Thiruvananthapuram has remitted Rs.25,000/- towards the fee for permanent affiliation vide chalan No.1 dated 29-11-2003 & 01-2-2005 to SRTT Chakkkudy.
5. Sanction in accordance accorded granting permanent affiliation for B.Sc. Chemistry course with an intake of 20 students from the academic year 2004-05 onwards in Sacred Heart College, Chakkkudy, Thiruvananthapuram.

Sd.
DEPUTY REGISTRAR(G&A-I)
FOR REGISTRAR

To
The Principal,
Sacred Heart College, Thiruvananthapuram

- Copy to:
1. The Secretary, University Grants Commission, New Delhi, (with C1)
 2. The Principal Secretary to Govt., Higher Education (D) Department Thiruvananthapuram (with C1)
 3. The Director of College Education, Thiruvananthapuram (with C1)
 4. The Deputy Director of College Education, Thiruvananthapuram
 5. Controller of Examinations (U/R/G/A/B) (G/A/I)
 6. GAI D3/SE/DP/R/C.

Forwaded by Order
Sd. REGISTRAR
GAI D3/SE/DP/R/C

4784

UNIVERSITY OF CALICUT

(Abstract)

Affiliation - Permanent B.Sc. Chemistry degree course in Sacred Heart College, Chalakkudy, Thrissur-
Granted - Orders issued.

GENERAL AND ACADEMIC BRANCH I

No.GAID2/7051/98 (1).

Dated, Calicut University P.O., 19.04.2005.

- Read: 1. U.O.No.GAID3/7079/97(2) dated 12/11/98.
2. U.O.of even No. dated 27/10/99, 8/1/2001 & 28/4/2001 & 19-4-2005.
3. U.O. of even No. dated 30/10/2003 & 10/12/2003.
4. Letter No.A1-1/98 dated 5/12/2003 from the Principal, Sacred Heart College, Chalakkudy, Thrissur (Dt).
5. Minutes of the meeting of the Syndicate held on 16/11/2004, Item No.2004-461 (confirmed vide item No.2004-532 on 23/12/2004).

ORDER

Provisional affiliations granted for starting B.Sc. Polymer Chemistry degree course in Sacred Heart College, Chalakkudy, Thrissur during the academic year 1998-99 with an intake of 20 students and intimation of provisional affiliation to the course up to the academic year 2003-04, was granted as per the University Order's read as first and second papers. Sanction has been accorded for the change of the degree course from B.Sc., Polymer Chemistry to B.Sc. Chemistry as per U.O read as third paper.

2. The Principal, Sacred Heart College, Chalakkudy, Thrissur had requested to grant permanent affiliation for B.Sc. Chemistry degree course as per the letter read as fourth paper. Accordingly, an Inspection Commission was appointed for verifying the facilities available in the College. The Commission visited the college and submitted the report.

3. Syndicate at its meeting held on 16/11/2004 vide item No.2004-461 (confirmed vide item 2004-532 on 23/12/2004 considered the question of granting permanent affiliation for B.Sc. Chemistry degree course in Sacred Heart College, Chalakkudy, Thrissur on the basis of the Inspection Commission report and resolved to grant permanent affiliation for B.Sc. Chemistry degree course in Sacred Heart College, Chalakkudy, Thrissur(Dt).

4. The Principal, Sacred Heart College, Chalakkudy, Thrissur has remitted Rs.25,000/- towards the fee for permanent affiliation vide chalan No.1 dated 29-11-2003 & 01-2-2005 at SBT Chalakkudy.

5. Sanction is, therefore accorded granting permanent affiliation for B.Sc. Chemistry course with Mathematics & Computer Application as subsidiaries and Hindi/Malayalam as languages under Part II, with an intake of 20 students from the academic year 2004-05 onwards in Sacred Heart College, Chalakkudy, Thrissur (Dt).

Sd/-

DEPUTY REGISTRAR(G&A-I)
FOR REGISTRAR

To

✓ The Principal,
Sacred Heart College, Thrissur.

Copy to:

1. The Secretary, University Grants Commission, New Delhi, (with CI)
2. The Principal Secretary to Govt., Higher Education (B) Department
Thiruvananthapuram (with CI)
3. The Director of Collegiate Education, Thiruvananthapuram (with CI)
4. The Deputy Director of Collegiate Education, Thrissur
5. Controller of Examinations/DR(GAII) (GAI)
6. GAID/SE/DE/FC.

Forwarded By Order

SECRETARY



AQAR 2020-21

HISTORY

Criterion I - Curricular Aspects

SUB CRITERION -1.2.1 - Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented



UNIVERSITY OF CALICUT

Abstract

General and Academic- Faculty of Humanities- BA History programme- Syllabus of fifth and sixth semester BA History (including Dual Core) along with the Syllabus of Gender Studies (HIS4B20) for IV semester BA History (dual core) - under CBCSS UG Regulation 2019 - with effect from 2019 Admission onwards - Implemented- Orders Issued

G & A - IV - B

U.O.No. 12854/2020/Admn

Dated, Calicut University.P.O, 22.12.2020

- Read:-*
1. UO. No. 4368/2019/Admn Dated: 23.03.2019
 2. UO. No. 8479/2019/Admn Dated: 30.06.2019
 3. UO. No. 3514/2020/Admn Dated: 17.03.2020
 4. UO. No. 5130/2020/Admn Dated: 04.06.2020
 5. Item No.3 of the Minutes of the meeting of the Board of Studies in History-UG held on 16.07.2020
 6. Item No. 19 of the Minutes of the meeting of the Faculty of Humanities held on 26.08.2020.
 7. Extract of the item No.II.D of the minutes of the LXXXI meeting of the Academic Council held on 01.10.2020.

ORDER

1. The Regulations for Choice Based Credit and Semester System for Under Graduate (UG) Curriculum-2019 (CBCSS UG Regulations 2019) for all UG Programmes under CBCSS-Regular and SDE/Private Registration, with effect from 2019 Admission, has been implemented vide paper read (1) above.
2. The Scheme and Syllabus of I and II Semesters of BA History Programme (including Dual core) in tune with new CBCSS UG Regulation-2019, has been implemented in the University with effect from 2019 Admission onwards, vide paper read (2) above.
3. The Syllabus of the Complementary Course, Historical Tourism offered by BA History programme in accordance with CBCSS UG Regulations-2019 has been implemented in the University with effect from 2019 Admission onwards, vide paper read (3) above.
4. The Scheme and Syllabus of III and IV Semesters of BA History Programme (including Dual core) in tune with new CBCSS UG Regulation-2019, has been implemented in the University with effect from 2019 Admission onwards, vide paper read (4) above.
5. The meeting of the Board of Studies in History (UG), held on 16.07.2020 resolved to approve the Syllabus of BA History Programme w.e.f 2019 admissions (V and VI Sem), along with the Syllabus of Gender Studies (HIS4B20) for IV semester BA History (double main), vide paper read (5) above.
6. The online meeting of the Faculty of Humanities held on 26.08.2020, vide paper read (6) above, has approved the above resolution of the Board of Studies.
7. The meeting of the Academic Council held on 01.10.2020 has approved the minutes of the meeting of the Board of Studies in History UG held on 16.07.2020 as approved by Faculty of Humanities vide paper read as (7) above. Sanction has been accorded by the Vice Chancellor in the file No. 7251/GA-IV-B1/2013/CU dated 09.10.2020 to implement the above decision of the Academic Council.
8. Sanction is therefore accorded to implement the Scheme and Syllabus of BA History Programme - Vth and VIth semester (including Dual Core) along with the Syllabus of Gender Studies (HIS4B20) for IVth semester BA History (dual core) in accordance with the CBCSS UG Regulations-2019, in the University with effect from 2019 Admission onwards.
9. Orders are issued accordingly. (Syllabus of I to VI sem with Model question papers appended).

Arsad M

Assistant Registrar

**CHOICE BASED CREDIT AND SEMESTER SYSTEM FOR
UNDER GRADUATE (UG) PROGRAMME**

UNIVERSITY OF CALICUT



**For
BA HISTORY
*Under***

**Restructured Curriculum and Syllabi
As per CBCSS
UG Regulations (2019)**

(2019 Admissions Onwards)

University of Calicut
Board of Studies in History (UG)
Revised Curriculum of Undergraduate
Programme in History
Effective from 2019- 20 Admissions

The revised syllabus is the product of a workshop held in May 2019, attended by around 35 teachers from various colleges under the University of Calicut, for revising and restructuring the curriculum, in the wake of the UG regulations 2019. The suggestions and opinions of the participants of the workshop have surely prevailed upon us in shaping the content of the new syllabus.

The following are the pedagogic objectives of teaching history at UG level

- a. inculcating curiosity about past
- b. imparting intellectual skills to make sense of the past
- c. developing the critical faculty of the students
- d. developing an understanding of the presentness of the past

Criticality is the soul of the discipline of history. In the present context, a more important objective shall be enabling the students to understand the fertile plurality of Indian culture and tradition and the cultural symbiosis in India that developed through the ages. It is with these objectives in mind that the courses of the programme of History have been designed and the contents have been fixed.

The Board also feels that since history is one of the most dynamic disciplines, periodic revision of the syllabus in subjects like history is essential to incorporate most recent developments within the discipline. The board has taken much care to see that these new shifts in the domain of historical research are amply reflected in the revised syllabus.

Dr. P P Abdul Razak
Chairman, Board of Studies in History (UG)
University of Calicut

BOARD OF STUDIES IN HISTORY (U G)

Sl. No	Name	Designation and Address
1	Dr. Abdul Razak P.P. (Chairman)	Asso. Professor, Dept. of History, PSMO College, Tirurangadi.
2	Suresh K.M	Assistant Professor, Dept. of History, Govt. College, Kodenchery Kozhikode
3	Dr. V.P. Devadas	Assistant Professor, Dept. of History, NSS College, Ottapalam, Palakkad.
4	Gafoor P	Assistant Professor, Dept. of History, SNGS College, Pattambi
5	Dr. Sajan R	Asst. Professor, Dept. History, NSS College, Manjeri
6	Shethor P.R	Assistant Professor, Dept. of History, Govt. College, Perambra
7	Ashraf Koyilothankandiyil	Assistant Professor, Dept of History, Govt. College Mokeri
8	Lukmanul Hakeem. K	Asst Professor, Dept of History, Govt. Arts and Science College, Meenchanda.
9	Dr. Joshy Mathew	Assistant Professor, Dept of History Pazhassiraja College Pulpally.
10	Dr. Binu M.John	Assistant Professor, Dept of History Christ College, Irinjalakuda.

GENERAL SCHEME OF THE PROGRAMME

The duration of a UG programme shall be 6 semesters distributed over a period of 3 academic years. The odd semesters (1, 3, 5) shall be from June to October and the even semesters (2, 4, 6) shall be from November to March.

The UG programme shall include five types of courses, viz; Common Courses (Code A), Core courses (Code B), Complementary courses (Code C), Open Course (Code D) and Audit courses (Code E).

Course code:

Each course shall have a unique alphanumeric code number, which includes abbreviation of the subject in three letters, the semester number (1 to 6) in which the course is offered, the code of the course (A to E) and the serial number of the course (01,02). The course code will be centrally generated by the university.

Sl. No	Course	No of Courses	Credits
1	Common Courses (English)	6	22
2	Common Courses (Additional Language)	4	16
3	Core Courses	15	58
4	Project (Linked to Core Courses)	1	2
5	Complementary Courses	2	16
6	Elective Course	1	3
7	Open Courses	1	3
	Total		120
8	Audit course	4	16
9	Extra Credit Course	1	4
	Total		140

About the Course:

The structure of BA Programme in History is as follows:

A. Common Courses

Sl. No	Code	Title	Credits
1	A01	Common English Course I	I
2	A02	Common English Course II	I
3	A03	Common English Course III	II
4	A04	Common English Course IV	II
5	A05	Common English Course V	III
6	A06	Common English Course VI	IV
7	A07(1)	Additional Language Course I	I
8	A08(1)	Additional Language Course II	II
9	A09	Additional Language Course III	III
10	A10	Additional Language Course IV	IV
TOTAL CREDIT			38

In general every under graduate student shall undergo 10 common courses (Total 38 credits). Common courses 1-6 shall be taught by English teachers and 7-10 by teachers of additional languages.

Common courses Semester wise

No.	Semester I	Semester II	Semester III	Semester IV
1	1,2,7	3,4,8	5,9	6,10

B. Core Courses

Core courses are the courses in the major (Core) subject of the degree programme chosen by the student. Core courses are offered by the parent department. The number of core courses offered to the students of History is 15, including a project work.

C. Complementary Courses

SlNo	Code	Title	CONTACT HOURS	SEMESTER	CREDIT
1		COMPLEMENTARY 1 COURSE 1	6	I	4
2		COMPLEMENTARY 2 COURSE 1	6	II	4
3		COMPLEMENTARY 2 COURSE 2	6	III	4
4		COMPLEMENTARY 1 COURSE 2	6	IV	4
TOTAL					16

Complementary courses cover one or two disciplines that are related to the core subject and are distributed in the first four semesters. There shall be one complementary course in a semester for B.A Programmes. The complementary courses in first and fourth semester (Type 1) shall be the same. Similarly the complementary courses in second and third semester (Type 2) shall be the same. The college can choose any complementary course either in Type 1 or in Type 2 for a programme. Once they choose the complementary courses that should be intimated to the university. If a college wants to change the complementary course pattern (Type 1 or Type 2) prior sanction has to be obtained. All other programmes, existing pattern will follow. The complimentary courses of History UG programme shall be from the complimentary courses offered by Social Science programmes; Economics, Political Science, Sociology, Anthropology, Journalism, West Asia, Gender Studies, etc. (U.O.No. 8047/2017/Admn dtd. 9.06.2017) However, a few colleges, who have been offering complimentary courses from the complimentary courses of History syllabi, due to the issue of workload of the teachers may be allowed to continue the practice.

Open Courses

There shall be one open course in core subjects in the fifth semester. The open course shall be open to all the students in the institution except the students in the parent department. The students can opt that course from any other department in the institution. Each department can decide the open course from a pool of three courses offered by the University. Total credit allotted for open course is 3 and the hours allotted is 3. If there is only one programme in a college, they can choose either language courses or physical education as open course.

D. Elective Courses

There shall be one Elective course in core subjects in the Sixth semester. The institutions can opt the elective course. Total credit allotted for elective course is 3 and the hours allotted is 3.

Ability Enhancement courses/Audit courses

These are courses which are mandatory for a programme but not counted for the calculation of SGPA or CGPA. There shall be one Audit course each in the first four semesters. These courses are not meant for class room study. The students can attain only pass (Grade P) for these courses. At the end of each semester there shall be examination conducted by the college from a pool of questions (Question Bank) set by the University. The students can also attain these credits through online courses like SWAYAM, MOOC etc (optional). The list of passed students must be sent to the University from the colleges at least before the fifth semester examination. The list of courses in each semester with credits is given below.

Course with credit Semester

Course	Credit	Semester
Environment Studies	4	1
Disaster Management	4	2
*Human Rights/Intellectual Property Rights/ Consumer Protection	4	3
*Gender Studies/Gerontology	4	4

* Colleges can opt any one of the courses.

Extra credit Activities

Extra credits are mandatory for the programme. Extra credits will be awarded to students who participate in activities like NCC, NSS and Swatch Bharath. Those students who could not join in any of the above activities have to undergo Calicut University Social Service Programme (CUSSP). Extra credits are not counted for SGPA or CGPA.

Credits

A student is required to acquire a minimum of 140 credits for the completion of the UG programme, of which 120 credits are to be acquired from class room study and shall only be counted for SGPA and CGPA. Out of the 120 credits, 38 (22 for common (English) courses + 16 for common languages other than English) credits shall be from common courses, 2 credits for project/corresponding paper and 3 credits for the open course. (In the case of LRP Programmes 14credits for common courses (English), 8 credits for additional language courses and 16 credits for General courses). The maximum credits for a course shall not exceed 5. Dual core programmes are having separate credit distribution. Audit courses shall have 4 credits per course

and a total of 16 credits in the entire programme. The maximum credit acquired under extra credit shall be 4. If more Extra credit activities are done by a student that may be mentioned in the Grade card. The credits of audited courses or extra credits are not counted for SGPA or CGPA.

Attendance

A student shall be permitted to appear for the semester examination, only if he/she secures not less than 75% attendance in each semester. Attendance shall be maintained by the Department concerned. Condonation of shortage of attendance to a maximum of 10% in the case of single condonation and 20% in the case of double condonation in a semester shall be granted by University remitting the required fee. Benefits of attendance may be granted to students who attend the approved activities of the college/university with the prior concurrence of the Head of the institution. **Participation in such activities may be treated as presence in lieu of their absence on production of participation/attendance certificate (within two weeks) in curricular/extracurricular activities (maximum 9 days in a semester).** Students can avail of condonation of shortage of attendance in a maximum of four semesters during the entire programme (Either four single condonations or one double condonation and two single condonations during the entire programme). If a student fails to get 65% attendance, he/she can move to the next semester only if he/ she quires 50% attendance. In that case, a **provisional registration** is needed. Such students can appear for supplementary examination for such semesters after the completion of the programme. Less than 50% attendance requires Readmission. Readmission is permitted only once during the entire programme.

Readmission

There shall be provision for Readmission of students in CBCSS UG 2019. The Principal can grant readmission to the student, subject to the conditions detailed below and inform the matter of readmission to the Controller of Examinations within one month of such readmission. This readmission is not to be treated as college transfer. There should be a gap of at least one semester for readmission. The candidate seeking readmission to a particular semester should have registered for the previous semester examination. Readmission shall be taken within two weeks from the date of commencement of the semester concerned. For readmission, the vacancy should be within the sanctioned strength in the parent college. If there is no vacancy in the junior batch of the parent college, readmission can be taken in another college with the junior batch if

there is vacancy within the sanctioned strength in the concerned college. If there is a change in complementary courses, it can be done with following conditions: i) the external and internal marks/grade obtained in the previous semesters for the earlier complementary courses will be cancelled. ii) the students have to write the external examinations for the previous semester for the new complementary courses along with the subsequent batch iii) An undertaking to the effect that “the internal evaluation for the previous semesters of the new complementary courses will be conducted”, is to be obtained from the Principal of the college in which the student intends to take readmission. If change in scheme occurs while readmission, provision for credit transfer is subject to common guidelines prepared by Board of Studies/ Faculty concerned. For readmission to CBCSS UG 2019 involving scheme change, the Principal concerned shall report the matter of readmission to Controller of Examinations with the details of previous semesters and course undergone with credits within two weeks in order to fix the deficiency/excess papers.

Grace marks

Grace marks may be awarded to a student for meritorious achievements in co-curricular activities (in Sports/Arts/NSS/NCC/Student Entrepreneurship) carried out besides the regular hours. Such a benefit is applicable and limited to a maximum of 8 courses in an academic year spreading over two semesters. In addition, maximum of 6 marks per semester can be awarded to the students of UG Programmes, for participating in the College Fitness Education Programme (COFE).

Project

Every student of a UG degree programme shall have to work on a project of 2 credits under the supervision of a faculty member or shall write a theory course based on Research Methodology on Writing Local History as per the curriculum. College shall have the liberty to choose either of the above. But SDE/Private Registration students shall write the Research Methodology course instead of project. Board of Studies concerned shall prepare the syllabus for the same.

Study Tour

Compulsory study tour to destinations of architectural, archaeological, historical and cultural importance is to be conducted either in 5th or in 6th semesters. The students should submit the tour report as assignment and present seminar papers based on the historical importance of places visited during study tour in the sixth semester. These should be considered as the

Assignment and Seminar components of the internal assessment for the HIS6 B14- Indian Heritage and Plurality of Cultures.

Examination

There shall be University examinations at the end of each semester. External **Viva-voce** will be conducted along with the project evaluation. **Project** evaluation shall be conducted at the end of sixth semester. 20 % of marks are awarded through internal assessment.

Course Evaluation

The evaluation scheme for each course shall contain two parts (1) Internal assessment (2) external evaluation. 20% weight shall be given to the internal assessment. The remaining 80% weight shall be for the external evaluation.

Internal Assessment

20% of the total marks in each course are for internal examinations. The marks secured for internal examination only need be sent to university by the colleges concerned. The internal assessment shall be based on a predetermined transparent system involving written test, assignments, seminars and attendance in respect of theory courses and lab test/records/viva and attendance in respect of practical courses. Internal assessment of the project will be based on its content, method of presentation, final conclusion and orientation to research aptitude. Components with percentage of marks of Internal Evaluation of Theory Courses are- Test paper 40% Assignment 20%, Seminar 20% and Classroom Participation based on Attendance 20%. (If a fraction appears in internal marks, nearest whole number is to be taken)

For the test paper marks, at least one test paper should be conducted. If more test papers are conducted, the mark of the best one should be taken. To ensure transparency of the evaluation process, the internal assessment marks awarded to the students in each course in a semester shall be notified on the notice board at least one week before the commencement of external examination. There shall not be any chance for improvement for internal marks. The course teacher(s) shall maintain the academic record of each student registered for the course, which shall be forwarded to the University by the college Principal after obtaining the signature of both course teacher and Head of the Department. The Split up of marks for Test paper and Classroom Participation (CRP) for internal evaluation are as follows.

Split up of of marks for Test paper

<i>Range of Marks in Test Paper</i>	<i>Out of 8 (Maximum internal Marks is 20)</i>
Less than 35%	1
35%- 45%	2
45%- 55%	3
55%- 65%	4
65%- 85%	6
85%- 100%	8

Split up of marks for Class Room Participation

<i>Range of CRP</i>	<i>Out of 4 (Maximum internal Marks is 20)</i>
50% ≤CRP <75%	1
75% ≤CRP <85%	2
85 % and above	4

Scheme of External Examination

Core courses consist of fifteen theory papers and a project work.

There will be **THREE types of scheme of examinations.**

Question Paper Type 1 for the papers having 4 or 5 credits: (Without Map)

This scheme consists of **external question paper with 80 marks and internal examination with 20 marks.** Duration of each external examination is 2.5hours. The students can answer all the questions in A & B sections. But there shall be ceiling in each section. Answer can be written either in English or in Malayalam

Section A

Short Answer type that carries 2 marks each 15questions Ceiling 25 marks

Section B

Paragraph/problem type that carries 5 marks each 8 questions Ceiling 35 marks

Section C

Essay type that carries 10marks (2 out of 4) 2X10= 20 marks

Question Paper Type 2 for the papers having 4 or 5 credits: (With Map)

This scheme consists of **external question paper with 80 marks and internal examination with 20 marks**. Duration of each external examination is 2.5 hours. The students can answer all the questions in A & B sections. But there shall be ceiling in each section. Answer can be written either in English or in Malayalam

Section A

Short Answer type that carries 2 marks each 15 questions Ceiling 25 marks

Section B

Paragraph/problem type that carries 5 marks each 7 questions Ceiling 30 marks

Section C

Map Question that carries 5 marks (1 question) 1X5= 5 marks

Section D

Essay type that carries 10marks (2 out of 4) 2X10= 20 marks

Question Paper Type 3 for the papers having 2 or 3 credits:

This scheme consists of external question paper with 60 marks and internal examination with 15 marks. Duration of each external examination is 2 hours. The students can answer all the questions in A & B sections. But there shall be ceiling in each section. Answer can be written either in English or in Malayalam

Section A

Short Answer type that carries 2 marks each 12 questions Ceiling 20 marks

Section B

Paragraph/problem type that carries 5 marks each 7 questions Ceiling 30 marks

Section C

Essay type that carries 10 marks (1 out of 2) 1X10= 10 marks

Evaluation and Grading

Mark system is followed instead of direct grading for each question. For each course in the semester letter grade and grade point are introduced in 10-point indirect grading system.

Ten Point Indirect Grading System

<i>% of Marks (IE+EE)</i>	<i>Grade</i>	<i>Interpretation</i>	<i>Grade point Average (G)</i>	<i>Range of grade points</i>	<i>Class</i>
95 and above	O	Outstanding	10	9.5 -10	First class with Distinction
85 to below 95	A+	Excellent	9	8.5 -9.49	
75 to below 85	A	Very good	8	7.5 -8.49	
65 to below 75	B+	Good	7	6.5 -7.49	First class
55 to below 65	B	Satisfactory	6	5.5 -6.49	
45 To below 55	C	Average	5	4.5 -5.49	Second class
35 to below 45	P	Pass	4	3.5 -4.49	Pass
Below 35	F	Failure	0	0	Fail
Incomplete	I	Incomplete	0	0	Fail
Absent	Ab	Absent	0	0	Fail

For the project work, out of the total 50 marks, 10 for internal assessment and 40 for External evaluation.

Evaluation of Project

This is done under mark system. There will be an internal assessment by the supervising teacher of the Project and an External evaluation by an External Examiner appointed by the University. Grade will be awarded to the candidates by combining the external and internal marks. The internal and external components are to be taken in the ratio 1:4. The internal will be 20 percent of the total and external will be 80 percent of the total.

COMPONENTS	Internal in Marks Total in 10 Marks	External in Marks Total in 40 Marks
Originality Relevance of the topic, statement of the objectives	2	8
Methodology- Reference/ Bibliography, Presentation, quality of analysis/ use of statistical tools	2	8
Scheme/ Organisation of report-Findings and Recommendations	3	12
Viva-Voce	3	12
Total	10	40

Improvement Course

Improvement of a particular semester can be done only once. The student shall avail of the improvement chance in the succeeding year after the successful completion of the semester concerned. The students can improve a maximum of two courses in a particular semester (for SDE/Private registration students also). The internal marks already obtained will be carried forward to determine the new grade/mark in the improvement examination (for regular students). If the candidate fails to appear for the improvement examination after registration, or if there is no change in the results of the improved examination, the mark/grade obtained in the first appearance will be retained.

Improvement and supplementary examinations cannot be done simultaneously.

History Courses

The syllabus appended herewith is a thoroughly restructured and reformed one in accordance with the proposed changes in curriculum. The opinions of veteran scholars and teachers as well as young scholars have been incorporated in to the new syllabus. Opinions of teachers were pooled in and the syllabus is prepared giving due importance to these opinions.

The syllabus reconstituted here primarily aims at introducing the fundamentals of historical knowledge in a wider range so as to equip the students with better understanding of Society and Historical processes. It also aims at exposing the spirit of research, analysis, criticism, innovation and invention among the students.

The present syllabus consists of 34 courses - fifteen core courses, twelve complementary courses, three open courses and four elective courses.

Details of the Courses

1. 15 core courses including the Project, all compulsory (in the place of the main papers), each having 4 credits. Code of the course - B
2. 12 complementary courses. Thus there are six groups of complementary courses -Modern Indian History (1857 to the Present), Modern World History from AD 1500 ,Social and Cultural History of Britain, West Asian Studies, Archaeology in India and History of Journalism . Each group consists of four courses. Only one group is to be opted.

CORE COURSES

(15 courses including project work)

Sl. No	Code	Title	Contact Hours	Semester	Credit
1	HIS1 B01	TRENDS IN HISTORIOGRAPHY	6	I	5
2	HIS2 B02	TRENDS IN INDIAN HISTORIOGRAPHY	6	II	5
3	HIS3 B03	WORLD HISTORY- 1	4	III	4
4	HIS3 B04	INDIAN HISTORY- 1	5	III	4
5	HIS4 B05	WORLD HISTORY- 2	4	IV	4
6	HIS4 B06	INDIAN HISTORY- 2	5	IV	4
7	HIS5 B07	WORLD HISTORY- 3	5	V	4
8	HIS5 B08	INDIAN HISTORY- 3	5	V	4
9	HIS5 B09	KERALA HISTORY-1	5	V	4
10	HIS5 B10	METHODOLOGY OF THE WRITING OF HISTORY	5	V	4
11	HIS6 B11	INDIAN HISTORY- 4	5	VI	4
12	HIS6 B12	KERALA HISTORY- 2	5	VI	4
13	HIS6 B13	GENDER STUDIES	5	VI	4
14	HIS6 B14	INDIAN HERITAGE AND PLURALITY OF CULTURES	5	VI	4
15	HIS6 B15	DISSERTATION/ METHODOLOGY OF LOCAL HISTORICAL WRITING	2 Hours each in 5 th and 6 th Semesters	V&VI	2
TOTAL CREDIT					60

COMPLEMENTARY COURSES

(12 courses)

Sl. No.	Code	Name of the Courses	Credit	Contact Hours/week	Sem
1	HIS1(2) C01	Modern Indian History (1857 to the Present): I	4	6	I/II
2	HIS4(3) C01	Modern Indian History (1857 to the Present): II	4	6	IV/III
3	HIS1(2) C02	Modern World History from AD 1500: I	4	6	I/II
4	HIS4(3) C02	Modern World History from AD 1500: II	4	6	IV/III
5	HIS1(2) C03	Social and Cultural History of Britain: I	4	6	I/II
6	HIS4(3) C03	Social and Cultural History of Britain: II	4	6	IV/III
7	HIS1(2) C04	West Asian Studies: I	4	6	I/II
8	HIS4(3) C04	West Asian Studies: II	4	6	IV/III
9	HIS1(2) C05	Archaeology In India: I	4	6	I/II
10	HIS4(3) C05	Archaeology In India: II	4	6	IV/III
11	HIS1(2) C06	History Of Journalism: I	4	6	I/II
12	HIS4(3) C06	History Of Journalism: II	4	6	IV/III
13	HIS1(2) C07	Tourism in Historical Perspective	4	6	I/II
14	HIS4(3) C07	History of Tourism Development in India	4	6	IV/III

OPEN COURSES

(3 courses)

Sl. No	Code	Title	Contact Hours	Semester	Credit
1	HIS5D01	HISTORICAL TOURISM	3	V	3
2	HIS5D02	HISTORY OF KERALA RENAISSANCE	3	V	3
3	HIS5D03	HISTORY OF SCIENCE AND TECHNOLOGY IN INDIA	3	V	3

ELECTIVE COURSES
(4 courses)

Sl. No	Code	Title	Contact Hours	Semester	Credit
1	HIS6 B16	HISTORY OF ARCHAEOLOGY IN INDIA	3	VI	3
2	HIS6 B17	HISTORY OF EPIGRAPHY IN INDIA	3	VI	3
3	HIS6 B18	ORAL HISTORY	3	VI	3
4	HIS6 B19	HISTORY OF HUMAN RIGHTS	3	VI	3

DUAL CORE (Double Main)

For Double Main Programmes, there should be the following Core Courses, 10 Common Courses and 1 Open Course (from any other departments) . The code for History Double Main will be same as that of the core courses, i.e., HIS- B-- . There are no Complementary Courses for Double Main.

Sl. No	Code	Title	CONTACT HOURS	SEMESTER	CREDIT
1	HIS1B01	TRENDS IN HISTORIOGRAPHY	6	I	5
2	HIS2B02	TRENDS IN INDIAN HISTORIOGRAPHY	6	II	5
3	HIS3B04	INDIAN HISTORY- 1	4	III	4
4	HIS4B06	INDIAN HISTORY- 2	5	IV	4
5	HIS4 B20	GENDER STUDIES	5	IV	4
6	HIS5B08	INDIAN HISTORY- 3	5	V	4
7	HIS5B09	KERALA HISTORY-1	5	V	4
8	HIS6B11	INDIAN HISTORY- 4	5	VI	4
9	HIS6B12	KERALA HISTORY- 2	5	VI	4
		TOTAL			38
	HIS6B15	*DISSERTATION	4	VI	3

*Dissertation / Project can be chosen from either of the two core courses.



AQAR 2020-21

ZOOLOGY

Criterion I - Curricular Aspects

SUB CRITERION -1.2.1 - Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented

UNIVERSITY OF CALICUT



B.Sc. ZOOLOGY PROGRAMME

[CBCSS UG 2019]

SYLLABUS

Core Courses

Open Courses

Complementary Courses

&

Model Question Papers

EFFECTIVE FROM 2019 ADMISSION

Members of Board of Studies in Zoology (UG)

(U.O.No.10961/2016/Admn. dated, Calicut University, P.O., 07.09.2016)

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**INTRODUCTION,
GUIDELINES
AND
GENERAL INFORMATION**

B.Sc. ZOOLOGY PROGRAMME

INTRODUCTION

The Higher Education Programme in Kerala has been witnessing a drastic change from 2009 admission onwards with the introduction of Semesterisation and Grading at the undergraduate level. As a continuation of this trend, UGC has recognized the importance of Outcome Based Education (OBE) to be incorporated in the Choice Based Credit and Semester System (CBCSS) for UG curriculum. A course in General Higher Education Programme in India needs to be designed and conducted to facilitate the students to meet the identified Course Outcomes (COs). The course outcomes address a subset of Programme Outcomes (POs) identified by the university or the autonomous institutions that offer the programme. Also, the course outcomes address the Programme Specific Outcomes (PSOs) identified by the Branch/Department. Keeping in view of the implementation of OBE-CBCSS of UGC, Kerala State Higher Education Council conducted three days workshop during 12 -14 February 2019 with the title “*Redesigning of Courses for Outcome Based Education (OBE)*” for the Board of Studies in UG Programme under Faculty of Science at Tagore Nikethan, University of Calicut.

Vide U.O No. GA I/J2/3601/08 (Vol. II) dated 19.06.2009, regulations for CBCSS for UG curriculum was implemented from 2009 admission onwards under the University of Calicut, as per the directions of Kerala State Higher Education Council. The regulations of CBCSS for UG curriculum was also modified [U.O. No. 3797/2013/CU dated 07.09.2013] and implemented from 2014 admission onwards under the University of Calicut, as per the recommendations of Hridayakumari Committee appointed by the Govt. of Kerala. The Academic Council in its special meeting held on 28.02.2019 has approved the CBCSS UG regulations 2019 [U.O No. 4368/2019/Admn dated, 23.03.2019] and has, therefore, been accorded to implement the regulations for Choice Based Credit and Semester System for Under Graduate curriculum-2019 (CBCSS UG Regulations 2019) for all UG Programme under CBCSS regular and SDE/Private registration in the university of calicut, w.e.f. 2019 admission.

Board of Studies in Zoology (U.G.) of University of Calicut [constituted as per U.O.No.10961/2016/Admn. Dated 07.09.2016] reviewed and meticulously analyzed the existing and continuing syllabi of B.Sc. Zoology Programme. BoS received many requests and suggestions regarding the course structure, content and credit distribution that are to be incorporated in to the existing syllabus. BoS also discussed the details of the syllabus of B.Sc. Zoology programme in the context of outcome based education and the regulations of CBCSS UG curriculum 2019. Accordingly, BoS has framed the curriculum, course structure, course content, instructional hours, scheme of instruction, scheme of evaluation, credits, mark distribution, duration of examination and model question papers of B.Sc. Zoology Programme [CBCSS UG] with the present requirements of the teaching and learning process.

In addition, the semester-end examinations (total 6 semesters) to be conducted by the university, a system of continuous evaluation through *Internal*

Assessment by the faculty members of the Department of Zoology of the respective institutions must be adopted for Zoology Core, Open and Complementary courses. The distribution of marks is 80% for external evaluation and 20% for internal assessment.

The syllabus for the six semesters of B.Sc. Degree Programme with Zoology as Core course of study which contain provision for both theory and practical components in all six semesters and complementary courses also contain both theory and practical components in four semesters.

Some changes are also made in the combination of core course content in the fifth and sixth semesters in order to complete the teaching process in time especially in the tight schedule of the semesters. Further, some pertinent topics are suggested for *seminar/ assignment* for theory courses with a view to enrich the UG Programme.

The practical courses offered are designed in such a way that they support the theory topics and also impart the basic skills and techniques required of them. In addition to the items for practical, a *Project work* forms an integral part of the curriculum during the sixth semester. *Field study/study tour* to the research institution/museum and places of biological/zoological importance/ecological interest is a compulsory element of the curriculum. Requirement to visit places of importance of elective subject area is also a compulsory element. Attempts have also been made to update the syllabus, considering the needs of the time and conforming to the work load prescribed by the university.

Accordingly, the BoS meeting held on 12.04.2019 at Calicut University took the decision **to implement the revised syllabus w.e.f. 2019 B.Sc. Zoology admission.**

AIMS AND OBJECTIVES

The Board of Studies in Zoology (UG) recognizes that curriculum, course content and assessment of scholastic achievement play complementary roles in shaping education. The revised Outcome Based Education- Choice Based Credit and Semester System for Under Graduate (UG) Curriculum for B.Sc. Zoology Programme envisages undergraduate education as a combination of general and specialized education with outcome based, simultaneously introducing the concepts of breadth and depth in learning. Besides recalling information, the learning process is aimed to acquire the ability for problem solving, and critical and creative thinking in students. The present attempt is to prepare the students for lifelong learning by drawing attention to the vast world of knowledge of animals and introducing them to the methodology of systematic academic enquiry. The crew of the syllabus ensures firm footing in fundamental aspects of Zoology and wide exposure to modern branches of Zoology to the students.

The expected outcome of the syllabus:

- To know the scope and importance of Zoology.
- To develop scientific temper among students.

- To inculcate interest in nature and living forms and their conservation.
- To make the students eco-friendly by creating a sense of environmental awareness in them.
- To give better exposure to the diversity of life forms.
- To give awareness about natural resources and their importance in sustainable development.
- To study different ecological sites for animals in their natural habitats by field study.
- To provide opportunities for the application of the acquired knowledge in day- to - day life.
- To develop skills in doing experiments, familiarizing equipments and biological specimens.
- To undertake scientific projects which help to develop research aptitude in students.
- To expose students to various fields in biological sciences and to develop interest in related disciplines.
- To attain interdisciplinary approach to understand the application of the subject in daily life.
- To familiarize the emerging areas of Zoology and their applications in various spheres of biological sciences and to appraise the students of its relevance in future studies.

AN OVERVIEW

Definitions and Structure

Title shall be called “Regulations for Choice Based Credit and Semester System for Under Graduate Curriculum 2019” (CBCSS UG 2019). **Programme** means the entire course of study and examinations lead to the award of a degree. **Duration of programme** means period of time required for the conduct of undergraduate programme i.e. six semesters distributed in a period of 3 years. The odd semesters (1, 3 and 5) shall be from June to October and the even semesters (2, 4 and 6) shall be from November to March. **Academic week** is a unit of five working days in which distribution of work is organised from Monday to Friday with five contact hours of one hour duration on each day. A sequence of 18 such academic weeks constitutes a semester. **Semester** constitute minimum of 18 weeks (16 instructional weeks and 2 weeks for examination).

Course means a segment of subject matter to be covered in a semester. The graduate programme includes five types of courses, *viz.*, common, core, complementary, open, audit /ability enhancement and improvement courses.

Common course means a course that comes under the category of courses for English and additional language, a selection of both is compulsory for all students undergoing undergraduate programme. Every undergraduate student shall undergo 10 common courses [6 English courses and 4 additional language courses] for completing the programme. **Core courses** are major (core) courses in a subject related to a particular degree programme. Core courses are offered by the parent department. There are 17 core courses including a project work and field study.

Complementary course means a course which is generally related to the core subject. It covers two disciplines in B.Sc. degree programme that are distributed in the first four semesters. There shall be one **Open course** in the 5th semester. This is a course outside the field of specialisation of the student, which can be opted by his/her choice. **Audit course/Ability Enhancement course** is a course which is mandatory. There shall be one Audit course each in the first four semesters. These courses are not meant for class room study. The credits of audited courses are not counted for SGPA or CGPA. [**Improvement course** is a course registered by a student for improving his/her performance.]

Course code of each course shall have a unique alphanumeric code number, which includes abbreviation of the subject in three letters, the semester number (1 to 6) in which the course is offered, the code of the course (A to E) and serial number of the course (01,02.). (A: Common course, B: Core course, BE: Core Elective course, C: Complementary course and D: Open course, E: Audit course) For example: ZOL5B06 represents a core course of serial number 06 offered in 5th semester in B.Sc. Zoology programme.

Each course shall have certain credits. **Credit** is a unit of academic input measured in terms of weekly contact hours/course content assigned to a course. **Extra Credit** is the mandatory additional credit awarded to a student over and above the minimum credits required in a programme, for participating in co-curricular activities and social activities outside the regular class hours, like NCC, NSS and Swatch Bharath. Those students who could not join in any of the above activities have to undergo Calicut University Social Service Programme (CUSSP). Extra credits are not counted for SGPA or CGPA.

Grade in a course is a letter symbol (O, A+, A, B+, B, C, P, F, I and Ab). Grade shall mean the prescribed alphabetical grade awarded to a student based on his/her performance in various examinations. Each letter grade is assigned a '**Grade point** (G) which is an integer indicating the numerical equivalent of the broad level of performance of a student in a course. **Grade Point** means point given to a letter grade on 10 point scale. **Strike off the roll:** A student who is continuously absent for 14 days without sufficient reason and proper intimation to the Principal of the college shall be removed from the roll.

Department means any teaching department in a college offering a course of study approved by the university as per the Statutes and Act of the University. **Department Co-ordinator** is a teacher nominated by a Dept. Council to co-ordinate all the works related to CBCSS UG undertaken in that department including continuous evaluation. **Department Council** means the body of all teachers of a department in a college. **Parent Department** means the Department which offers a particular degree programme. **Course teacher:** A teacher nominated by the Head of the Department shall be in charge of a particular course.

College Co-ordinator is a teacher nominated by the college council to co-ordinate the effective running of the process of CBCSS including internal evaluation undertaken by various departments within the college. She/he shall be the convener for the college level monitoring committee. **College level monitoring committee:** A monitoring Committee is to be constituted for CBCSS UG at the

college level with Principal as Chairperson, college co-ordinator as convener and department co-ordinators as members. The elected college union chairperson shall be a member of this committee. **Faculty Adviser** means a teacher from the parent department nominated by the Department Council, who will advise the student in the academic matters and in the choice of open courses.

Project work & Field study: Every student of a UG programme shall have to work on a project under the supervision of a faculty member. A field study/study tour for 5 days is compulsory during the tenure of the B.Sc. Zoology programme.

Grace Marks: Grace marks may be awarded to a student for meritorious achievements in co-curricular activities (in Sports/Arts/NSS/NCC/Student Entrepreneurship) carried out besides the regular hours. Such a benefit is applicable and limited to a maximum of 8 courses in an academic year spreading over two semesters. In addition, maximum of 6 marks per semester can be awarded to the students of UG Programme, for participating in the College Fitness Education Programme (COFE).

Attendance: A student shall be permitted to appear for the semester examination, only if he/she secures not less than 75% attendance in each semester. Attendance shall be maintained by the Department concerned.

A student is required to acquire a minimum of **140** credits for passing the degree programme, of which 120 credits are to be acquired from class room study and shall only be counted for SGPA and CGPA.

Common courses:	38 credits (22 for English courses + 16 for Additional languages).
Core courses:	55 credits (including 3 credits for project work & field study).
Open course:	3 credits
Complementary courses:	24 credits (12 credits each for Chemistry and Botany)
Audit courses:	16 credits (4 credits per course in first 4 semesters)
Extra credits:	4 credits (4 credits in first 4 semesters)

If more Extra credit activities are done by a student that may be mentioned in the Grade card. *The credits of audited courses or extra credits are not counted for SGPA or CGPA.* The successful completion of all the courses (common, core, complementary and open courses) prescribed for the degree programme with 'P' grade shall be the minimum requirement for the award of degree.

CALICUT UNIVERSITY SOCIAL SERVICE PROGRAMME (CUSSP)

In this programme, a student has to complete 12 days of social service. This has to be completed in the first four semesters; 3 days in each semester. For the regular programme the student has to work in a Panchayath or Local body or in a hospital/ poor home or old age home or in a Pain & palliative centre or any social work assigned by the College authorities. Students who engaged in College Union

activities and participate in sports and cultural activities in Zonal level have to undergo only 6 days of CUSSP during the entire programme. The whole documents regarding the student should be kept in the college and the Principal should give a certificate for the same. The list of students (successfully completed the programme) must be sent to the university before the commencement of the fifth semester examinations. A college level co-ordinator and a department level co-ordinator shall be appointed for the smooth conduct of the programme.

AUDIT COURSES/ABILITY ENHANCEMENT COURSES

These are courses which are mandatory for a programme but not counted for the calculation of SGPA or CGPA. There shall be one Audit course each in the first four semesters. These courses are not meant for class room study. The students can attain only pass (Grade P) for these courses. At the end of each semester, there shall be examination conducted by the college from a pool of questions (Question Bank) set by the University. The Question paper shall be of 100 marks of 3 hour duration. The students can also attain these credits through online courses like SWAYAM, MOOC etc (optional). The list of passed students must be sent to the University from the colleges at least before the fifth semester examination. The lists of courses in each semester with credits are given below.

Table 1. AUDIT COURSES: CREDITS IN FIRST 4 SEMESTERS

Sl.No.	Semesters	Courses	Credits	Marks	Duration of Exam
1	I	Environmental studies	4	100	3 hrs
2	II	Disaster Management	4	100	3 hrs
3	III	*Human Rights/Intellectual Property Rights/ Consumer Protection	4	100	3 hrs
4	IV	*Gender studies/Gerontology	4	100	3 hrs
		Total	16	400	

**College can opt any one of the courses.*

Table 2. CREDITS AND MARKS DISTRIBUTION OF B.Sc. ZOOLOGY PROGRAMME

[Course Structure]

Semesters	Common course: Credits		Core Course Zoology: Credits	Open Course: Credits	Complementary course: Credits		Total Credits	Audit course: Credits	Extra Credits
	English	Addl Language			Chemistry	Botany			
I	3+3	4	2	--	2	2	16	4	
II	4+4	4	2	--	2	2	18	4	
III	4	4	3	--	2	2	15	4	4
IV	4	4	3+4*	--	2+4*	2+4*	27	4	
V	--	--	4+4+4+4	3	--	--	19	--	
VI	--	--	3+3+3+3 +2+4*+4 *+3**	--	--	--	25	--	
Total	22 Credits (550 Marks)	16 Credits (400 Marks)	55 Credits (1450 Marks)	3 Credits (75 Marks)	12 Credits (400 Marks)	12 Credits (400 Marks)	120 Credits (3275 Marks)	16 Credits (400 Marks)	4 Credits (100 Marks)
	38 Credits (950 Marks)		82 Credits (2325 Marks)				120 Credits (3275 Marks)	#16 Credits (400 Marks)	#4 Credits (100 Marks)

Grand Total: 3775 Marks; 140 Credits (Minimum)

**Practical (12 Credits) **Project work & Field study (3 Credits).*

Credits acquired from class room study and counted for SGPA and CGPA: 120

Total 140 credits [120+16+4] are required for completing UG programme.

#Credits of audit course (16) and extra credits (4) are mandatory and not counted for SGPA or CGPA calculation.

Table 3. COURSEWISE MARK DISTRIBUTION OF B.Sc. ZOOLOGY PROGRAMME

Courses			No. of Courses	Marks per Course	Total Marks	Grand Total Marks
Common Courses	English	Theory	6	75 x 2 = 150 100 x 4 = 400	550	550
	Additional Language	Theory	4	100	400	400
Core Courses	Zoology	Theory	13	75 x 9 = 675 100 x 4 = 400	1075	1450
		Practical	3	100	300	
		Project work and Field study	1	75	75	
Open course	Zoology/Other streams	Theory	1	75	75	75
Complementary courses	Chemistry	Theory	4	75 x 4 = 300	300	400
		Practical	1	100	100	
	Botany	Theory	4	75 x 4 = 300	300	400
		Practical	1	100	100	
Total Marks						3275
Audit courses		Theory	4	400	400	400
Extra credits			4		100	100
Total Marks						500

Grand Total: 3775 Marks (3275+500); 140 Credits (Minimum)

Table 4. SEMESTER WISE DISTRIBUTION OF CREDITS AND MARKS

B.Sc. Zoology Programme
Total Credits: 140; Total Marks: 3775

Semester	Course	Credits	Marks
I	Common course: English	3	75
	Common course: English	3	75
	Common course: Additional Language	4	100
	Core Course I: Animal Diversity: Non-chordata Part-I	2	75
	Complementary course: Chemistry	2	75
	Complementary course: Botany	2	75
	Audit Course: Environmental studies	4	100
	Total	20	575
II	Common course: English	4	100
	Common course: English	4	100
	Common course: Additional Language	4	100
	Core Course II: Animal Diversity: Non-chordata Part-II	2	75
	Complementary course: Chemistry	2	75
	Complementary course: Botany	2	75
	Audit Course: Disaster Management	4	100
	Total	22	625
III	Common course: English	4	100
	Common course: Additional Language	4	100
	Core Course III: Animal Diversity: Chordata Part-I	3	75
	Complementary course: Chemistry	2	75
	Complementary course: Botany	2	75
	Audit Course: Human Rights/Intellectual Property Rights/ Consumer Protection	4	100
	Total	19	525
IV	Common course: English	4	100
	Common course: Additional Language	4	100
	Core course IV: Animal Diversity: Chordata Part-II	3	75
	Core course V: Zoology Core Practical – I [Practical I*A +I*B+ I*C+ I*D]	4	100
	Complementary course: Chemistry	2	75
	Complementary course: Chemistry Practical	4	100
	Complementary course: Botany	2	75
	Complementary course: Botany Practical	4	100
	Audit Course: Gender studies/Gerontology	4	100
	Extra credits (Maximum)	4	100
	Total	35	925

Semesters	Course	Credits	Marks
V	Core Course VI: Cell Biology and Genetics	4	100
	Core Course VII: Biotechnology, Microbiology and Immunology	4	100
	Core Course VIII: Biochemistry and Molecular Biology	4	100
	Core Course IX: Methodology in Science, Biostatistics and Bioinformatics	4	100
	Open course: Any other streams	3	75
	Total	19	475
VI	Core Course X: Physiology and Endocrinology	3	75
	Core Course XI: Reproductive and Developmental Biology	3	75
	Core Course XII: Environmental and Conservation Biology	3	75
	Core Course XIII: Ethology, Evolution and Zoogeography	3	75
	Core Course XIV: Elective course (Any one below) [01] Human Genetics [02] Aquaculture, Animal Husbandry & Poultry science [03] Applied Entomology	2	75
	Core Course XV: Zoology Core Practical- II [Practical II*A + II*B]	4	100
	Core Course XVI: Zoology Core Practical- III [Practical III*A+ III*B]	4	100
	Core Course XVII: Project Work and Field study	3	75
	Total	25	650
	Grand Total	140	3775

Table 5
B.Sc. ZOOLOGY (CORE) PROGRAMME
STRUCTURE OF CORE, OPEN AND ELECTIVE COURSES
Course code, Title, Instructional hours, Credits, Marks and Examination duration in various semesters

Total Credits: 58
(w.e.f. 2019 Admission)

Semester	Core/Open/ Elective courses	Code	Course Title	Instructional hours/week	Instructional hrs in a semester	Credits	External Marks	Internal marks	Total marks	Duration of Exam (hrs)
I	Theory I	ZOL1B01T	Animal Diversity : Nonchordata Part-I	2	36	2	60	15	75	2
	Practical I*A	--	Practical related to ZOL1B01T	2	36	*	--	--	--	
II	Theory II	ZOL2B02T	Animal Diversity : Nonchordata Part-II	2	36	2	60	15	75	2
	Practical I*B	--	Practical related to ZOL2B02T	2	36	*	--	--	--	
III	Theory III	ZOL3B03T	Animal Diversity: Chordata Part-I	3	54	3	60	15	75	2
	Practical I*C	--	Practical related to ZOL3B03T	2	36	*	--	--	--	
IV	Theory IV	ZOL4B04T	Animal Diversity: Chordata Part-II	3	54	3	60	15	75	2
	Practical I*D	--	Practical related to ZOL4B04T	2	36	*	--	--	--	
	Practical-I {I*A +I*B+ I*C+ I*D}	ZOL4B05P	Zoology Core Practical I (Practical related to ZOL1B01T,02T,03T and 04T)	8	144	4	80	20	100	4
V	Theory V	ZOL5B06T	Cell Biology and Genetics	3	54	4	80	20	100	2.5
	Theory VI	ZOL5B07T	Biotechnology, Microbiology and Immunology	4	72	4	80	20	100	2.5
	Practical II*A	--	Practical related to ZOL5B06T & 07T	4	72	**	--	--	--	
	Theory VII	ZOL5B08T	Biochemistry and Molecular Biology	4	72	4	80	20	100	2.5
	Theory VIII	ZOL5B09T	Methodology in Science, Biostatistics and Bioinformatics	3	54	4	80	20	100	2.5
	Practical II*B	--	Practical related to ZOL5B08T, & 09T	4	72	**	--	--	--	
	#Open Course +++ (for other streams)	ZOL5D01T ZOL5D02T ZOL5D03T	• Reproductive Health and Sex Education • Nutrition, Health & Hygiene • Applied Zoology (Any one) #	3	54	3	60	15	75	2
VI	Theory IX	ZOL6B10T	Physiology and Endocrinology	3	54	3	60	15	75	2
	Theory X	ZOL6B11T	Reproductive and Developmental Biology	3	54	3	60	15	75	2
	Practical III*A	--	Practical related to ZOL6B10T & 11T	4	72	**	--	--	--	
	Theory XI	ZOL6B12T	Environmental and Conservation Biology	3	54	3	60	15	75	2
	Theory XII	ZOL6B13T	Ethology, Evolution and Zoogeography	3	54	3	60	15	75	2

Semester	Core/Open/ Elective courses	Code	Course Title	Instructional hours/week	Instructional hrs in a semester	Credits	External Marks	Internal marks	Total marks	Duration of Exam (hrs)
	Theory XIII Elective Course##	ZOL6B14BE01T ZOL6B14BE02T ZOL6B14BE03T	<ul style="list-style-type: none"> • Human Genetics • Aquaculture, Animal Husbandry & Poultry science • Applied Entomology (Any one) ## 	3	54	2	60	15	75	2
	Practical III*B	--	Practical related to theory core course ZOL6B12T, 13T & ZOL6B14 BE01T/ BE02T/ BE03T	4	72	**	--	--	--	
			Project work / Field study	2	32	***	--	--	--	
	Practical II (II*A +II*B)	ZOL6B15P	Zoology Core Practical II (Practical related to ZOL5B06T, 07T, 08T, 09T)	8	144	4**	80	20	100	4
	Practical III (III*A +III*B)	ZOL6B16P	Zoology Core Practical III (Practical related to ZOL6B10T, 11T, 12T, 13T & 14T E01/E02/E03)	8	144	4**	80	20	100	4
		ZOL6B17PF	Project work & Field study	--	--	3***	60	15	75	
			Total			58	1220	305	1525	

Core courses 1450 + Open course 75 = 1525 Marks

Scheme of evaluation: External 80 % +Internal 20 %

* Practical examination for 1st, 2nd, 3rd and 4th semesters will be held at the end of IV semester.

** Practical examination for 5th and 6th semesters will be held at the end of VI semester.

*** Evaluation of Project work and Field study will be held at the end of VI semester.

External evaluation of Project work (60 Marks) and Field study report (15 Marks) will be conducted at the end semester VI after Practical III (External:80% Marks + Internal:20 % marks; **Total: 75 Marks**). (It includes a Viva-voce based on report of Project work and field study).

Project: External 48 marks + Internal 12 marks = **60** marks

Field study report: External 12 marks +Internal 3 marks = **15** marks

Open course of any one course (ZOL5D01T/ ZOL5D02T/ ZOL5D03T) opted by the dept. is for other streams.

Open course Theory: 80% marks for external and 20% marks for internal evaluation.

+++ See Appendix of Open course

Elective course of any one course (ZOL6B14T BE01/ ZOL6B14T BE02/ ZOL6B14TBE03) opted by the dept. is for Core course.

Table 6**+++Appendix****B.Sc. ZOOLOGY OPEN COURSE**
*[For students of other streams]***STRUCTURE OF OPEN COURSE****Course code, Title, Instructional hours, Credits, Marks and Duration of Examinations****Total Credits: 3 (External 80% and Internal 20%)
(w.e.f. 2019Admission)**

Semester	Open Course	Code	Course content	Instructional hrs / week	Instructional hrs in a semester	Credits	External Marks	Internal marks	Total marks	Duration of Exam (hrs)
V	Theory [Any one]	ZOL5D01T	<i>Open Course 01 : Reproductive Health and Sex Education</i>	3	54	3	60	15	75	2
		ZOL5D02T	<i>OpenCourse 02 : Nutrition, Health and Hygiene</i>							
		ZOL5D03T	<i>OpenCourse 03 : Applied Zoology</i>							
	TOTAL				3	54	3	60	15	75

Open course of any one course (ZOL5D01T/ ZOL5D02T/ ZOL5D03T) opted by the dept. is for students of other streams.

There shall be one open course in core subjects in the fifth semester. The open course shall be open to all the students in the institution except the students in the parent department. The students can opt that course from any other department in the institution. Each department can decide the open course from a pool of three courses offered by the University. For open courses there shall be a minimum of 10 and maximum of 75 students per batch. Total credits allotted for open course is 3 and the hours allotted is 3. If there is only one programme in a college, they can choose either language courses or physical education as open course.



UNIVERSITY OF CALICUT

Abstract

General and Academic - Faculty of Science - Syllabus of MSc Applied Zoology Programme under CCSS PG Regulations 2019 (University Teaching Departments) with effect from 2019 Admission onwards-Implemented- Orders-Issued.

G & A - IV - J

U.O.No. 11743/2019/Admn

Dated, Calicut University.P.O, 30.08.2019

- Read:-*1. U.O No.4487/2019/Admn dated 26.03.2019
2. Item No. 1 of the minutes of the meeting of the Board of Studies in Zoology PG held on 28.06.2019
3. Remark from the Dean, Faculty of Science dated 30.07.2019.

ORDER

The Regulations under Choice-based Credit Semester System for Post Graduate Programmes (CCSS-PG-2019) of all Teaching Departments / Schools of the University of Calicut w.e.f. 2019 admissions has been implemented in the University of Calicut vide paper read first above.

The meeting of Board of Studies in Zoology PG held on 28.06.2019 has approved the Syllabus of M.Sc Applied Zoology Programme in tune with the new CCSS PG Regulations with effect from 2019 Admission onwards, vide paper read second above.

The Dean, Faculty of Science has approved the minutes of the meeting of the Board of Studies in Zoology PG held on 28.06.2019 vide paper read third above.

Under these circumstances , considering the urgency, the Vice Chancellor has accorded sanction to implement the Scheme and Syllabus of M.Sc Applied Zoology Programme in accordance with the new CCSS PG Regulations 2019, in the University with effect from 2019 Admission onwards,subject to ratification by the Academic Council.

The Scheme and Syllabus of M.Sc Applied Zoology Programme for Teaching Departments /Schools of the University of Calicut in accordance with CCSS PG Regulations 2019, is therefore implemented with effect from 2019 Admission onwards.

Orders are issued accordingly. (Syllabus appended).

Biju George K

Assistant Registrar

To

The HoD, Department of Zoology

Copy to: PS to VC/PA to PVC/ PA to Registrar/PA to CE/JCE I/JCE V/DoA/EX and EG Sections/GA I F/CHMK Library/Information Centres/SF/DF/FC

Forwarded / By Order

Section Officer

DEPARTMENT OF ZOOLOGY
UNIVERSITY OF CALICUT
CALICUT UNIVERSITY P.O.
KERALA, 673 635



RESTRUCTURED CURRICULUM AND SYLLABI FOR
M. Sc. APPLIED ZOOLOGY
(Choice based Credit Semester System – CCSS)

(w.e.f. 2019 admission)

C O N T E N T S

	Pages
1. Regulations and Scheme of Examination	3 – 9
2. M. Sc. Applied Zoology Syllabus (CCSS)	
2.1. Semester I	10 – 29
2.2. Semester II	30 – 48
2.3. Semester III	49 – 65
2.4. Semester IV	66 – 80
3. Model Questions	81 – 97

REGULATIONS AND SCHEME OF EXAMINATION (w.e.f. 2019 admission)

1. The syllabi and curriculum of Applied Zoology have been revised and restructured with effect from 2019 admissions.
2. The two-year Post Graduate Programme will be in the semester pattern. There will be four semesters in the entire course, with two semesters in each year. Each semester will have 90 instructional days with 6 hours of instructions each day under the five-day system. End-semester examinations will be held inside the 90 regular instructional days.
3. The programme shall include three types of courses, viz. Core courses, Elective courses and Audit courses. The papers in the first three semesters will constitute the core courses and in the third and fourth semesters there will be elective courses. Entomology is the broad area of elective courses offered in this department for the time being. There shall be a compulsory Project/Dissertation to be undertaken by all students.
4. In addition to the Core courses, Elective courses and compulsory Project/Dissertation, which are the mandatory requirement of the programme, each student should undergo Audit courses - Ability Enhancement Course (AEC) and Professional Competency Course (PCC) – each with 2 credits in the first two semesters of the programme. The student should undergo any one course listed under each category (AEC and PCC) in the respective semesters. Each student will be under the supervision of a faculty who will be responsible for monitoring the course and evaluation. The allotment of the faculty will be decided by the Department Council. The examination and evaluation for Professional competency course should focus on evaluating the skill component involved, and these courses are to be done within the first two semesters. The credits will not be counted for computing the overall SGPA/CGPA of the student. The concerned department shall conduct examination for these courses and shall intimate /upload the results of the same to the University on the stipulated date during the Third Semester. The student has to obtain only minimum pass requirements in these two courses. The broad frameworks of the compulsory audited courses are given hereunder.
5. SCHEME OF EVALUATION:

5.1. Evaluation of all semester theory/ practical papers will be done in two parts namely by continuous internal evaluation and external evaluation. 20% weight shall be given to the internal evaluation. The remaining 80% weight shall be for the end semester external evaluation. The internal evaluation shall be based on a predetermined transparent system involving periodic written tests, viva-voce, seminars and attendance in respect of theory courses and based on written tests, viva-voce and lab skill/records in respect of practical courses as detailed below:

Theory Paper	Marks	Practical Paper	Marks
Attendance*	3	Lab skill/ Quality of Records	5
Seminar	5	Practical Test	10
Test Paper	8	Viva-voce	5
Viva-Voce / Field work	4		
Total marks	20	Total marks	20

*90% & above: 3 marks, 80 to 89%: 2 marks, 75 to 79%: 1 mark, below 75%: Nil

The details of executing the internal evaluation shall be decided by the concerned Departmental Council. To ensure transparency of the evaluation process, photocopies of the answer scripts of the test papers shall be returned to the students within a week of the conduct of the tests. Any dispute regarding the internal evaluation shall be taken up with the concerned teacher within 48 hours. The internal assessment marks awarded to the students in each course in a semester shall be notified on the notice board at least one week before the commencement of external examination.

5.2. The external examination in theory courses is to be conducted with question papers set by external examiners. The evaluation of the answer scripts shall be done by the teacher offering the course and an external expert based on a well-defined scheme of valuation framed by them.

5.3. The external examination in practical courses shall be conducted and evaluated by two examiners - one internal and an external.

5.4. The valuation scheme for Project/Dissertation shall be jointly done by the supervisor of the project in the department and an External Expert from the approved panel, based on a well-defined scheme of valuation framed by them. The following break-up is suggested for the

valuation. The concerned Department Council / BoS may decide on alternative break-up, if required, specific to the discipline of study.

Sl. No.	Particulars	Weightage (%)
1	Review of Literature and Formulation of the Research Problem/Objective	20
2	Methods and Description of the techniques used	15
3	Analysis and Discussion of results	30
4	Presentation of the report, organization, linguistics style, references etc.	15
5	Viva Voce examination based on the Project work/Dissertation	20
Total		100

6. Attendance: The minimum requirement of attendance during a semester shall be 75% for each course. Attendance shall be maintained by the course teacher. 10% condonation can be granted on the attendance requirements by the Chairman of the Academic Committee on genuine grounds, provided it is also recommended by the Department Council. A fee for this purpose may be collected as prescribed by the Academic Committee and approved by the Syndicate. Candidates who do not satisfy the required minimum attendance in a course shall be awarded zero grade point in that course
7. GRADING SYSTEM: The indirect absolute grading system where the marks are compounded to grades based on pre-determined class intervals and letter grades based on 10-point grading system as recommended by UGC shall be followed. Based on the % marks scored (internal and external marks put together), the students are graded in each course applying the following grading system:

Range of Marks (%)	Grade Point	Letter Grade
85-100	8.5 - 10.0	O (Outstanding)
75 – 84.99	7.5 - 8.49	A+ (Excellent)
65 – 74.99	6.5 - 7.49	A (Very Good)
55 – 64.99	5.5 - 6.49	B+ (Good)
50 – 54.99	5.0 - 5.49	B (Above Average)
45 – 49.99	4.5 - 4.99	C (Average)
40 – 44.99	4.0 – 4.49	P (Pass)
0 - 39	0 – 3.99	F (Failed)/ RA(Reappear)

-	0	I (Incomplete)
-	0	Ab (Absent)

SCHEME OF EXAMINATION
M.Sc. APPLIED ZOOLOGY (2019 admission onwards)

SUMMARY OF COURSES

Semester	Course Type	Course Mode	No. of Course	Credits/ course	Marks/ course	Total Credits	Total Marks
FIRST	Core	Theory	4	4	100	16	600
	Core	Practical	2	2	100	4	
SECOND	Core	Theory	4	4	100	16	600
	Core	Practical	2	2	100	4	
THIRD	Core	Theory	2	4	100	8	600
	Core	Practical	1	2	100	2	
	Elect	Theory	2	4	100	8	
	Elect	Practical	1	2	100	2	
FOURTH	Core	Project	1	8	200	8	600
	Elect	Theory	2	4	100	8	
	Elect	Practical	2	2	100	4	
Grand Total						80	2400

Total credits: Core course : Theory - 40; Practical - 10; Total - 50
 Elective course : Theory - 16; Practical - 06; Total - 22
 Project : 08
Grand total : 80

SEMESTER-WISE DETAILS**FIRST SEMESTER**

Code No. & Course	Teaching Hours	Credits	Ext. Marks	Int. Marks	Total Marks
ZOO 1C 01- BIOCHEMISTRY	80 hrs	4	80	20	100
ZOO 1C 02 – BIOPHYSICS & BIOSTATISTICS	80 hrs	4	80	20	100
ZOO 1C 03 – BIOSPHERE ECOLOGY	80 hrs	4	80	20	100
ZOO 1C 04- SYSTEMATICS & ANIMAL BEHAVIOUR	80 hrs	4	80	20	100
ZOO 1C 05 – BIOCHEMISTRY, BIOPHYSICS & BIOSTATISTICS PRACTICAL	60 hrs	2	80	20	100
ZOO 1C 06 – SYSTEMATICS, BEHAVIOUR & BIOSPHERE ECOLOGY PRACTICAL	60 hrs	2	80	20	100
Total for First Semester		20	480	120	600

SECOND SEMESTER

Code No. & Course	Teaching Hours	Credits	Ext. Marks	Int. Marks	Total Marks
ZOO 2C 07- CYTOGENETICS & EVOLUTION	80 hrs	4	80	20	100
ZOO 2C 08 – MOLECULAR BIOLOGY	80 hrs	4	80	20	100
ZOO 2C 09 – BIOTECHNOLOGY	80 hrs	4	80	20	100
ZOO 2C 10- ANIMAL PHYSIOLOGY & ENDOCRINOLOGY	80 hrs	4	80	20	100
ZOO 2C 11 - CYTOGENETICS & ANIMAL PHYSIOLOGY PRACTICAL	60 hrs	2	80	20	100
ZOO 2C 12 - MOLECULAR BIOLOGY & BIOTECHNOLOGY PRACTICAL	60 hrs	2	80	20	100
Total for Second Semester		20	480	120	600

THIRD SEMESTER

Code No. & Course	Teaching Hours	Credits	Ext. Marks	Int. Marks	Total Marks
ZOO 3C 13- DEVELOPMENTAL BIOLOGY & ANIMAL ETHICS	80 hrs	4	80	20	100
ZOO 3C 14 – MICROBIOLOGY & IMMUNOLOGY	80 hrs	4	80	20	100
ZOO 3E 15 – GENERAL ENTOMOLOGY	80 hrs	4	80	20	100
ZOO 3E 16- INSECT PHYSIOLOGY & BIOCHEMISTRY	80 hrs	4	80	20	100
ZOO 3C 17 - DEVELOPMENTAL BIOLOGY, MICROBIOLOGY & IMMUNOLOGY PRACTICAL	60 hrs	2	80	20	100
ZOO 3E 18 - GENERAL ENTOMOLOGY & INSECT PHYSIOLOGY BIOCHEMISTRY PRACTICAL	60 hrs	2	80	20	100
Total for Third Semester		20	480	120	600

FOURTH SEMESTER

Code No. & Course	Allotted Hours	Credits	Ext. Marks	Int. Marks	Total Marks
ZOO 4C 19- PROJECT	160 hrs	8	160	40	200
ZOO 4E 20 – AGRICULTURAL ENTOMOLOGY & ACAROLOGY*	80 hrs	4	80	20	100
ZOO 4E 21 – INSECT PESTS – CONTROL AND MANAGEMENT*	80 hrs	4	80	20	100
ZOO 4E 22 – ECOLOGY & ETHOLOGY OF INSECTS*	80 hrs	4	80	20	100
ZOO 4E 23 – MEDICAL, VETERINARY & FORENSIC ENTOMOLOGY*	80 hrs	4	80	20	100
ZOO 4E 24 – PRACTICAL ON 4E 20*	30 hrs	2	80	20	100
ZOO 4E 25 – PRACTICAL ON 4E 21*	30 hrs	2	80	20	100
ZOO 4E 26 – PRACTICAL ON 4E 22*	30 hrs	2	80	20	100
ZOO 4E 27 – PRACTICAL ON 4E 23*	30 hrs	2	80	20	100
Total for Fourth Semester		20	480	120	600

C - Core course; E - Elective course

* Elective Courses (Any Two Theory course and its Practical is to be opted by the student)

Allotment of Teaching hours per Week in Each Semester

Course/ Activity	Hours allotted per Week				
	First Semester	Second Semester	Third Semester	Fourth Semester	Total
Core Theory	4 hrs X 4 courses = 16 hrs	4 hrs X 4 courses = 16 hrs	4 hrs X 4 courses = 16 hrs	--	48 hrs
Core Practical	2 Practical X 2 courses = 12 hrs	2 Practical X 2 courses = 12 hrs	2 Practical X 2 courses = 12 hrs	--	36 hrs
Elective Theory	--	--		4 hrs X 2 courses = 8 hrs	12 hrs
Elective Practical	--	--		2 Practical X 1 course = 6 hrs	6 hrs
Seminar/ Assignment	2 hrs	2 hrs	2 hrs	2 hrs	8 hrs
Project/ Dissertation	--	--	--	14 hrs	14 hrs
Total hrs per week	30 hrs	30 hrs	30 hrs	30 hrs	



AQAR 2020-21

MATHEMATICS

Criterion I - Curricular Aspects

SUB CRITERION -1.2.1 - Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented



UNIVERSITY OF CALICUT

Abstract

General and Academic - Faculty of Science - Modified Syllabus of BSc Mathematics Programme under CBCSS UG Regulations 2019 with effect from 2020 Admission onwards - Implemented- Orders Issued.

G & A - IV - J

U.O.No. 9389/2020/Admn

Dated, Calicut University.P.O, 13.10.2020

- Read:-*
1. U.O.No. 4368/2019/Admn dated 23.03.2019
 2. U.O.No. 18084/2019/Admn dated 28.12.2019
 3. The minutes of the meeting of the Board of Studies in Mathematics UG held on 17.03.2020 & 10.07.2020
 4. The item nos.14(a) & 14(b) in the minutes of the meeting of Faculty of Science held on 08.09.2020
 5. The Item no.II.I in the minutes of the meeting of Academic Council held on 01.10.2020

ORDER

1. The Regulations for Choice Based Credit and Semester System for Under Graduate (UG) Curriculum-2019 (CBCSS UG Regulations 2019) for all UG Programmes under CBCSS-Regular and SDE/PrivateRegistration w.e.f. 2019 admission, was implemented vide paper read first above, and the same has been modified vide paper read second above.
2. The meeting of the Board of Studies in Mathematics (UG) held on 17/03/2020 & 10/07/2020 recommended certain modifications in the Syllabus of B.Sc Mathematics Programme, in tune with the new CBCSS UG-2019 Regulations and the modifications made applicable with effect from 2020 admissions onwards, vide paper read third above.
3. The Faculty of Science has approved the modified syllabus of BSc Mathematics programme in tune with the new CBCSS UG-2019 Regulations with effect from 2020 Admission onwards and the same has been approved by the Academic Council, vide paper read fourth & fifth above, respectively.
4. Hence, the Modified Scheme and Syllabus of B Sc Mathematics Programme in accordance with CBCSS UG Regulations 2019, is therefore implemented in the University with effect from 2020 Admission onwards.
5. Orders are issued accordingly. (Syllabus appended).

Arsad M

Assistant Registrar

To

The Principals of all Affiliated Colleges / The Director, School of Distance Education
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B.Sc. DEGREE PROGRAMME

CHOICE BASED CREDIT

**SEMESTER SYSTEM
(CBCSS-UG Regulations 2019)**

**MATHEMATICS
(CORE, OPEN & COMPLEMENTARY
COURSES)**

SYLLABUS

(Effective from 2020 admission onwards)



UNIVERSITY OF CALICUT

Syllabus structure

Core Courses

The following courses are compulsory for BSc Mathematics programme.

Sl. No	Code	Name of the course	Semester	No of contact hours/Week	Credits	Max. Marks			Exam dur. (Hrs)
						Internal	External	Total	
1	MTS1B01	Basic Logic and Number Theory	1	4	4	20	80	100	2.5
2	MTS2B02	Calculus of Single variable-1	2	4	4	20	80	100	2.5
3	MTS3B03	Calculus of Single variable-2	3	5	4	20	80	100	2.5
4	MTS4B04	Linear Algebra	4	5	4	20	80	100	2.5
5	MTS5B05	Abstract Algebra	5	5	4	20	80	100	2.5
6	MTS5B06	Basic Analysis	5	5	4	20	80	100	2.5
7	MTS5B07	Numerical Analysis	5	4	3	15	60	75	2
8	MTS5B08	Linear Programming	5	3	3	15	60	75	2
9	MTS5B09	Introduction to Geometry and Theory of Equations	5	3	3	15	60	75	2
		Project	5	2					
10		Open Course (Offered by Other Departments)	5	3	3	15	60	75	2
11	MTS6B10	Real Analysis	6	5	5	20	80	100	2.5
12	MTS6B11	Complex Analysis	6	5	5	20	80	100	2.5
13	MTS6B12	Calculus of Multi variable	6	5	4	20	80	100	2.5
14	MTS6B13	Differential Equations	6	5	4	20	80	100	2.5
15	MTS6B14	Elective	6	3	2	15	60	75	2
16	MTS6P15(PR)	Project Viva	6	2	2	15	60	75	
				68	58			1450	

Elective Courses

One of the following four courses can be offered in the sixth semester as an elective course (Code MTS6B14(E01), MTS6B14(E02) and MTS6B14(E03)).

Sl. No	Code	Name of the course	Semester	No of contact hours/Week	Credits	Max. Marks			Exam dur. (Hrs)
						Internal	External	Total	
1	MTS6B14(E01)	Graph Theory	6	3	2	15	60	75	2
2	MTS6B14(E02)	Topology of Metric spaces	6	3	2	15	60	75	2
3	MTS6B14(E03)	Mathematical Programming with Python and Latex	6	3	2	15	60	75	2

Open Courses

One of the following four courses can be offered in the fifth semester as an open course for students from other degree programmes (MTS5D01, MTS5D02, MTS5D03 and MTS5D04).

Sl. No	Code	Name of the course	Semester	No of contact hours/Week	Credits	Max. Marks			Unty. exam Dur. (Hrs)
						Internal	External	Total	
1	MTS5D01	Applied Calculus	5	3	3	15	60	75	2
2	MTS5D02	Discrete Mathematics for Basic and Applied Sciences	5	3	3	15	60	75	2
3	MTS5D03	Linear Mathematical Models	5	3	3	15	60	75	2
4	MTS5D04	Mathematics for Decision Making	5	3	3	15	60	75	2

Complementary Courses

Sl. No	Code	Name of the course	Semester	No of contact hours/Week	Credits	Max. Marks			Unty. exam Dur. (Hrs)
						Internal	External	Total	
1	MTS1C01	Mathematics-1	1	4	3	15	60	75	2
2	MTS2C02	Mathematics-2	2	4	3	15	60	75	2
3	MTS3C03	Mathematics-3	3	5	3	15	60	75	2
4	MTS4C04	Mathematics-4	4	5	3	15	60	75	2

Credit Distribution of BSc Mathematics Programme

Sl. No	Course	Credits	
1	English	22	
2	Additional Language	16	
3	Core Course	13 Courses	51
		1 Elective	2
		Project	2
4	Complementary course I	12	
5	Complementary course II	12	
6	Open Course	3	
Total		120	

Scheme of Evaluation

The evaluation scheme for each course shall contain two parts: internal evaluation and external evaluation.

Internal Evaluation

20% of the total marks in each course are for internal evaluation. The colleges shall send only the marks obtained for internal examination to the university.

Components of Internal Evaluation

Sl No	Components	Marks (For Courses with Max. Marks 75)	Marks (For Courses with Max. Marks 100)
1	Class Room Participation(Attendance)	3	4
2	Assignment	3	4
3	Seminar	3	4
4	Test paper	6	8
Total		15	20

a) Percentage of Class Room Participation (Attendance) in a Semester and Eligible Internal Marks

% of Class Room Participation (Attendance)	Out of 3 (Maximum internal marks is 15)	Out of 4 (Maximum internal marks is 20)
$50\% \leq CRP < 75\%$	1	1
$75\% \leq CRP < 85\%$	2	2
85% and above	3	4

CRP means % of class room participation (Attendance)

b) Percentage of Marks in a Test Paper and Eligible Internal Marks

Range of Marks in test paper (TP)	Out of 6 (Maximum internal marks is 15)	Out of 8 (Maximum internal marks is 20)
Less than 35%	1	1
$35\% \leq TP < 45\%$	2	2
$45\% \leq TP < 55\%$	3	3
$55\% \leq TP < 65\%$	4	4
$65\% \leq TP < 85\%$	5	6
$85\% \leq TP \leq 100\%$	6	8

Evaluation of Project

1. Evaluation of the Project Report shall be done under Mark System.
2. The evaluation of the project will be done at two stages:
 - Internal Assessment (supervising teachers will assess the project and award internal Marks)

- External evaluation (external examiner appointed by the University)

3. Grade for the project will be awarded to candidates, combining the internal and external marks.

4. The internal to external components is to be taken in the ratio 1 : 4.

Assessment of different components may be taken as below.

Internal assessment of Project (15 Marks)

(Supervising Teacher will assess the Project and award internal Marks)

Sl. No.	Components	Internal Marks
1	Originality	3
2	Methodology	3
3	Scheme / Organization of Report	4.5
4	Viva Voce	4.5
Total		15

External Evaluation of Project (60 Marks)

(To be done by the External Examiner appointed by the University)

Sl. No.	Components	External Marks
1	Relevance of the Topic, Statement of Objectives	12
2	Reference/ Bibliography, Presentation, quality of Analysis/ Use of Statistical Tools.	12
3	Findings and recommendations	18
4	Viva-Voce	18
Total		60

Pattern of Question Paper for University Examinations

	For Courses with Max. External Marks 80 (2.5 Hrs)		For Courses with Max. External Marks 60 (2 Hrs)	
Section A	Short answer type carries 2 marks each - 15 questions	Ceiling - 25	Short answer type carries 2 marks each - 12 questions	Ceiling - 20
Section B	Paragraph/ Problem type carries 5 marks each - 8 questions	Ceiling - 35	Paragraph/ Problem type carries 5 marks each - 7 questions	Ceiling - 30
Section C	Essay type carries 10 marks (2 out of 4)	$2 \times 10 = 20$	Essay type carries 10 marks (1 out of 2)	$1 \times 10 = 10$
Total		80		60

* Questions are to be evenly distributed over the entire syllabus. At least 20% of questions from each module must be included in each section of the question paper for courses having four modules in the syllabus and 30% for courses having three modules in the syllabus.



UNIVERSITY OF CALICUT

Abstract

General and Academic - Faculty of Science - Syllabus of MSc Mathematics Programme under CBCSS PG Regulations 2019 with effect from 2019 Admission onwards - Corrected - Orders Issued

G & A - IV - J

U.O.No. 1336/2020/Admn

Dated, Calicut University.P.O, 31.01.2020

- Read:-1. U.O.No. 4487/2019/Admn Dated 26.03.2019
2. U.O.No. 8953/2019/Admn Dated, 06.07.2019
3. Letter dated 03.12.2019 from the Member, Faculty of Science (former Chairman, Board of Studies in Mathematics PG)
4. U.O.No. 15132/2019/Admn Dated 28.10.2019
5. U.O.No. 1135/2020/Admn Dated, 28.01.2020
6. Remarks of the Dean, Faculty of Science

ORDER

The Regulations for Choice Based Credit and Semester System for Post Graduate (PG) Curriculum-2019 (CBCSS PG Regulations 2019) for all PG Programmes under CBCSS-Regular and SDE / PrivateRegistration w.e.f. 2019 admission implemented vide paper read first above and the same was modified vide paper read fourth & fifth above.

The Scheme and Syllabus of MSc Mathematics programme under CBCSS PG Regulations 2019 with effect from 2019 Admission onwards was implemented ,vide paper read as second above.

The former Chairman, Board of Studies in Mathematics (PG) suggested the following corrections in the syllabus of MSc Mathematics programme under CBCSS PG Regulations 2019 and submitted the corrected syllabus, vide paper read third above.

The text book " Simmons, G.F Differential Equations with Applications and Historical Notes(3rd Edn.)" of the course ODE and Calculus of Variations included in the 2nd semester is changed as Simmons, G.F Differential Equations with Applications and Historical Notes.

The Dean, Faculty of Science approved the corrected syllabus of MSc Mathematics programme in tune with the new CBCSS PG Regulations with effect from 2019 Admission onwards, vide paper read sixth above.

Under these circumstances , considering the urgency, the Vice Chancellor accorded sanction to implement the corrected scheme and syllabus of MSc Mathematics Programme in accordance with the new CBCSS PG Regulations 2019, in the University with effect from 2019 Admission onwards, subject to ratification by the Academic Council.

The corrected Scheme and Syllabus of MSc Mathematics Programme in accordance with CBCSS PG Regulations 2019 is ,therefore ,implemented with effect from 2019 admission onwards.The U.O.No. 8953/2019/Admn Dated, 06.07.2019 stands modified to this extent.

Orders are issued accordingly. (Corrected Syllabus appended).

Biju George K

Assistant Registrar

To

The Principals of all Affiliated Colleges
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UNIVERSITY OF CALICUT



SYLLABUS FOR MSc MATHEMATICS (CBCSS) PG PROGRAMME

EFFECTIVE FROM 2019 ADMISSION ONWARDS
Total Credits :80

SEMESTER 1

Course Code	Title of the Course	No. of Credits	Work Load Hrs./week	Core/Audit Course
MTH1C01	Algebra- I	4	5	core
MTH1C02	Linear Algebra	4	5	core
MTH1C03	Real Analysis I	4	5	core
MTH1C04	Discrete Mathematics	4	5	core
MTH1C05	Number Theory	4	5	core
MTH1A01	Ability Enhancement Course ^a	4	0	Audit Course

SEMESTER 2

Course Code	Title of the Course	No. of Credits	Work Load Hrs./week	Core/Elective
MTH2C06	Algebra- II	4	5	core
MTH2C07	Real Analysis II	4	5	core
MTH2C08	Topology	4	5	core
MTH2C09	ODE & calculus of variations	4	5	core
MTH2C10	Operations Research	4	5	core
	Professional Competency Course ^a	4	0	Audit Course

SEMESTER 3

Course Code	Title of the Course	No. of Credits	Work Load Hrs./week	Core/Elective
MTH 3C11	Multivariable Calculus & Geometry	4	5	core
MTH3C12	Complex Analysis	4	5	core
MTH3C13	Functional Analysis	4	5	core
MTH3C14	PDE & Integral Equations	4	5	core
	Elective I*	3	5	Elec.

SEMESTER 4

Course Code	Title of the Course	No. of Credits	Work Load Hrs./week	Core/Elective
MTH4C15	Advanced Functional Analysis	4	5	Core
	Elective II**	3	5	Elec.
	Elective III**	3	5	Elec.
	Elective IV**	3	5	Elec.
MTH4P01	Project	4	5	Core
MTH4 V01	Viva Voce	4		Core

^a Evaluation of these courses will be as per the latest PG regulations.

* This Elective is to be selected from list of elective courses in third semester

** This Elective is to be selected from list of elective courses in fourth semester

List of Elective Courses in Third Semester

1. MTH3E01 Coding theory
2. MTH3E02 Cryptography
3. MTH3E03 Measure & Integration
4. MTH3E04 Probability Theory

List of Elective Courses in Fourth Semester

1. MTH4E05 Advanced Complex Analysis
2. MTH4E06 Algebraic Number Theory
3. MTH4E07 Algebraic Topology
4. MTH4E08 Commutative Algebra
5. MTH4E09 Differential Geometry
6. MTH4E10 Fluid Dynamics
7. MTH4E11 Graph Theory
8. MTH4E12 Representation Theory
9. MTH4E13 Wavelet Theory

ABILITY ENHANCEMENT COURSE(AEC)

Successful fulfilment of any one of the following shall be considered as the completion of AEC. (i) Internship, (ii) Class room seminar presentation, (iii) Publications, (iv) Case study analysis, (v) Paper presentation, (vi) Book reviews. A student can select any one of these as AEC.

Internship: Internship of duration 5 days under the guidance of a faculty in an institution/department other than the parent department. A certificate of the same should be obtained and submitted to the parent department.

Class room seminar: One seminar of duration one hour based on topics in mathematics beyond the prescribed syllabus.

Publications: One paper published in conference proceedings/ Journals. A copy of the same should be submitted to the parent department.

Case study analysis: Report of the case study should be submitted to the parent department.

Paper presentation: Presentation of a paper in a regional/ national/ international seminar/conference. A copy of the certificate of presentation should be submitted to the parent department.

Book Reviews: Review of a book. Report of the review should be submitted to the parent department.

PROFESSIONAL COMPETENCY COURSE (PCC)

A student can select any one of the following as Professional Competency course:

1. Technical writing with \LaTeX .
2. Scientific Programming with Scilab.
3. Scientific Programming with Python.

PROJECT

The Project Report (Dissertation) should be self contained. It should contain table of contents, introduction, at least three chapters, bibliography and index. The main content may be of length not less than 30 pages in the A4 format with one and half line spacing. The project report should be prepared preferably in \LaTeX . There must be a project presentation by the student followed by a viva voce. The components and weightage of External and Internal valuation of the Project are as follows:

Components	External(weigtag)	Internal (weightage)
Relevance of the topic & staement of problem	4	1
Methodology & analysis	4	1
Quality of Report & Presentation	4	1
Viva Voce	8	2
Total weigtage	20	5

The external project evaluation shall be done by a Board consisting two External Examiners. The Grade Sheet is to be consolidated and must be signed by the External Examiners.

MTH4V01 VIVA VOCE EXAMINATIONS

The Comprehensive Viva Voce is to be conducted by a Board consisting of two External Examiners. The viva voce must be based on the core papers of the entire programme. There should be questions from at least one course of each of the semesters I, II, and

III. Total weightage of viva voce is 15. The same Board of two External Examiners shall conduct both the project evaluation and the comprehensive viva voce examination. The Board of Examiners shall evaluate at most 10 students per day.

EVALUATION AND GRADING

The evaluation scheme for each course except audit courses shall contain two parts.

(a) **Internal Evaluation:** 20% Weightage

(b) **External Evaluation:** 80% Weightage

Both the Internal and the External evaluation shall be carried out using direct grading system as per the general guidelines of the University. Internal evaluation must consist of (i) 2 tests (ii) one assignment (iii) one seminar and (iv) attendance, with weightage 2 for tests (together) and weightage 1 for each other component.

Each of the two internal tests is to be a 10 weightage examination of duration one hour in direct grading. The average of the final grade points of the two tests can be used to obtain the final consolidated letter grade for tests (together) according to the following table.

Average grade point (2 tests)	Grade for Tests	Grade Point for Tests
4.5 to 5	A+	5
3.75 to 4.49	A	4
3 to 3.74	B	3
2 to 2.99	C	2
Below 2	D	1
Absent	E	0

Table 1: Internal Grade Calculation: Examples

Tests	Grade Point of Test1	Grade Point of Test2	Average Test Grade Point	Test Grade	Test Grade Point	Test Weightage	Test Weighted Grade Point
Student1	4.8	3.5	4.15	A	4	2	8
Student2	5	4.8	4.9	A+	5	2	10
Student3	2.3	4.7	3.5	B	3	2	6

Assignment	Assignment Grade	Assignment Grade Point	Assignment Weightage	Assignment Weighted Grade Point
Student1	A+	5	1	5
Student2	A	4	1	4
Student3	C	2	1	2

Seminar	Seminar Grade	Seminar Grade Point	Seminar Weightage	Seminar Weighted Grade Point
Student1	B	3	1	3
Student2	A+	5	1	5
Student3	D	1	1	1

Attendance	Attendance Grade	Attendance Grade Point	Attendance Weightage	Attendance Weighted Grade Point
Student1	A+	5	1	5
Student2	A+	5	1	5
Student3	C	2	1	2

Consolidation	Total Weighted Grade Point	Total Weightage	Total Internal Grade Point	Final Internal Grade
Student1	21	5	$21/5 = 4.2$	A+
Student2	24	5	$24/5 = 4.8$	O
Student3	11	5	$11/5 = 2.2$	F

Question Paper Pattern for the written examinations

For each course there will be an external examination of duration 3 hours. The valuation will be done by Direct Grading System. Each question paper will consist of 8 short answer questions each of weightage 1, 9 paragraph type questions each of weightage 2, and 4 essay type questions each of weightage 5. All short answer questions are to be answered while 6 paragraph type questions and 2 essay type questions are to be answered with a total weightage of 30. The questions are to be evenly distributed over the entire syllabus(see the model question paper). More specifically, each question paper consists of three parts viz Part A, Part B and Part C . Part A will consist of 8 short answer type questions each of weightage 1 of which at least 2 questions should be from each unit. Part B has 3 units based on the 3 modules of each course. From each module there will be three questions of which two should be answered. Part C will consist of four essay type questions each of weightage 5 of which 2 should be answered. These questions should cover the entire syllabus of the course.



AQAR 2020-21

COMPUTER SCIENCE

Criterion I - Curricular Aspects

SUB CRITERION -1.2.1 - Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented



UNIVERSITY OF CALICUT

Abstract

General and Academic - Faculty of Science - Syllabus of MSc Computer Science Programme under CCSS PG Regulations 2019 (University Teaching Departments) with effect from 2019 Admission onwards-Implemented- Orders Issued.

G & A - IV - J

U.O.No. 10218/2019/Admn

Dated, Calicut University.P.O, 31.07.2019

*Read:-*1) U.O No.4500/2019/Admn dated 26.03.2019

- 2) Item No.1 of the minutes of the meeting of the Board of Studies in Computer Science & Application PG held on 10.06.2019
- 3) Item No. I.1 of the minutes of the meeting of Faculty of Science held on 27.06.2019

ORDER

The Regulations under Choice-based Credit Semester System for Post Graduate Programmes (CCSS-PG -2019) of all Teaching Departments / Schools of the University of Calicut w.e.f 2019 admissions has been implemented in the University of Calicut vide paper read first above.

The meeting of Board of Studies in Computer Science & Application PG held on 10.06.2019 has approved the Syllabus of MSc Computer Science Programme for Teaching Departments / Schools of the University of Calicut in tune with the new CCSS PG Regulations with effect from 2019 Admission onwards, vide paper read second above.

The Faculty of Science at its meeting held on 27.06.2019 has approved the minutes of the meeting of the Board of Studies in Computer Science & Application PG held on 10.06.2019, vide paper read third above.

Under these circumstances , considering the urgency, the Vice Chancellor has accorded sanction to implement the Scheme and Syllabus of M.S.c Computer Science Programme in accordance with the new CCSS PG Regulations 2019, in the University with effect from 2019 Admission onwards, subject to ratification by the Academic Council.

The Scheme and Syllabus of MSc Computer Science Programme for Teaching Departments / Schools of the University of Calicut in accordance with CCSS PG Regulations 2019, is therefore implemented in the University with effect from 2019 Admission onwards.

Orders are issued accordingly. (Syllabus appended).

Biju George K

Assistant Registrar

To

The HoD, Department of Computer Science/Co-ordinator CCSIT
Copy to: PS to VC/PA to PVC/ PA to Registrar/PA to CE/JCE I/JCE V/DoA/EX and EG
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Forwarded / By Order

Section Officer

UNIVERSITY OF CALICUT
DEPARTMENT OF COMPUTER SCIENCE



Regulations, Scheme of Evaluation Course, Structure Syllabus for
MASTER OF SCIENCE (M.Sc.)

in

COMPUTER SCIENCE
(Choice Based Credit Semester System — CCSS
For the students admitted from the Academic Year 2019-2020 onwards)

Under the

FACULTY OF SCIENCE

June, 2019

©University of Calicut, 2019

REGULATIONS

The existing regulations of Choice-based Credit Semester System (UO No. 4500/2019/Admn. Dated 26-03-2019) which are applicable for University Teaching Departments are also applicable for this programme with the following exceptions.

I Objectives: The course of the MSc (Computer Science) Programme is designed with the following objectives:

- To equip students to take up challenging research oriented responsibilities and courses for their higher studies/profession.
- To train and equip the students to meet the requirements of the Software Industry in the country and outside.
- To motivate and support the students to prepare and qualify challenging competitive examinations such as JRF/NET/JAM/GATE etc.

II Programme Structure:

- 1 Duration of the course shall be 2 years, divided into 4 semesters. The entire period of the four semester shall be divided for one core and one elective courses and for the Project Work.
- 2 The programme includes three types of courses, viz., Core courses (Code C), Elective Courses (Code E) and Audit Courses (Code A).
- 3 Selection and Eligibility for Admission is based on the existing University rules.
- 4 Evaluation of all semester theory papers will be on the basis of existing CCSS norms.
- 5 Conduct of Practical Examinations: Odd semester Practical Examinations will be conducted internally by the Department and Even Semester Examinations will be conducted by the Controller of Examination.
- 6 Core Courses: 'Core Course' means a course of a particular degree programme, which must be successfully completed by a student to receive the degree and which cannot be substituted by any other course. Core courses are offered by the Department conducting the programme.
- 7 Elective courses: 'Elective course' means a courses which can be substituted by equivalent course from the same or other Department/Schools and which must be successfully completed to receive the degree.

- 8 Audit Courses: There will be two Audit Courses with 2 credits each
- i. Ability Enhancement Course: A compulsory course which is mandatory for all programmes but its grade will be not be counted for the computation of SGPA or CGPA. This course is to get professional competency and exposure in the coarsened core area.
 - ii. Professional Competency Course: A compulsory course which is mandatory for all programmes but its grade will be not be counted for the computation of SGPA or CGPA. This course is to enhance the ability and skill in the coarsened core area.

These have to be done one each in the first two semesters. The credits will not be counted for evaluating the overall SGPA and CGPA. Concerned Department shall conduct examination for these courses and have to intimate /upload the results of the same to the University on the stipulated date during the III Semester. Students have to obtain only minimum pass requirements in the Audit Courses.

- 9 **Project Work and Viva:** The Project work should be carried out over the period of 16 weeks in the final semester in an Industry / R and D organization / Department/Institution. If the project is carried out in an Industry / R and D organization outside the campus, then a co-guide shall be selected from the Department/ Institution concerned. Every student should do the Project individually and no grouping is allowed. All the candidates are required to get the approval of their synopsis and the guide before commencement of the project from the Department / Institution and the matter may be intimated to the University at the beginning of the semester by the Department / Institution. The project will be reviewed periodically every month by the Department / Institutional. The continuous assessment marks (CA) will be based on the periodic progress and progress report.

At the end of the semester the candidate shall submit the Project report (two bound copies and one soft copy) duly approved by the guide, co-guide for End Semester Assessment. Evaluation for ESA should be conducted by a board of examiners appointed by the University. (Mark Distribution: Content 30% + Methodology 30% + Presentation 20 %, and Via- voce 20 %). If project work and the report are found to be not up to the expected standard, the examiners can ask the candidate to modify and resubmit the project report after incorporating the suggestions of the examiners. Such reports shall be resubmitted within the stipulated period suggested by the examiner(s).

UNIVERSITY OF CALICUT
Department of Computer Science
M.Sc. Computer Science
 Under CCSS (with effect from 2019 Admission)
COURSE STRUCTURE AND SCHEME OF EVALUATION

Semester 1

Sl.No.	Course Code	Course	Instructional Hrs/week		Exam Duration		Marks			Credit
			Lect/Lab	Tutorial	Theory	Practical	ESA	CA	Total	
1	CSC1C01	Discrete Mathematical Structures	3	1	3	—	80	20	100	4
2	CSC1C02	Advanced Data Structures and Algorithms	3	1	3	—	80	20	100	3
3	CS1CC03	Principles of Programming Methodology	3	1	3	—	80	20	100	4
4	CSC1C04	Theory of Computation	3	1	3	—	80	20	100	4
5	CSC1C05	Computer Organization and Architecture	3	1	3	—	80	20	100	4
6	CSC1C06	Practical 1	10	5	—	3	80	20	100	3
7	CSC1A01	Introduction to Research Methodology	—	—	3	—	—	100	100	2
Total			25	10	—	—	—	—	600	22

Semester 2

Sl.No.	Course Code	Course	Instructional Hrs/week		Exam Duration		Marks			Credit
			Lect/Lab	Tutorial	Theory	Practical	ESA	CA	Total	
1	CSC2C07	Design and Analysis of Algorithms	3	1	3	—	80	20	100	4
2	CSC2C08	Advanced Database Management System	3	1	3	—	80	20	100	4
3	CSC2C09	Operating System Concepts	3	1	3	—	80	20	100	4
4	CSC2C10	Object Oriented Programming with Java	3	1	3	—	80	20	100	3
5	CSC2E01-07	Elective 1	3	1	3	—	80	20	100	4
6	CSC2C11	Practical 2	10	5	—	3	80	20	100	3
7	CSC2A02	Term Paper	—	—	—	—	—	100	100	2
Total			25	10	—	—	—	—	600	22

Elective 1	Credit
CSC2E01- Artificial Intelligence	4
CSC2E02 - Information Theory and Coding	4
CSC2E03 - Computer Graphics	4
CSC2E04 - Advanced Microprocessor and Micro Controller	4
CSC2E05 - Numerical and Statistical Methods	4
CSC2E06 Distributed Computing	4
CSC2E07 Simulation and Modelling	4

Semester 3

Sl.No.	Course Code	Course	Instructional Hrs/week		Exam Duration		Marks			Credit
			Lect/Lab	Tutorial	Theory	Practical	ESA	CA	Total	
1	CSC3C12	Principles of Compiler Design	3	1	3	—	80	20	100	4
2	CSC3C13	Data Communication and Networking	3	1	3	—	80	20	100	4
3	CSC3C14	Web Technology	3	1	3	—	80	20	100	3
4	CSC3E08-CSC3E12	Elective 2	3	1	3	—	80	20	100	4
5	CSC3E13-CSC3E18	Elective 3	3	1	3	—	80	20	100	4
6	CSC3C15	Practical 3	10	5	—	3	80	20	100	3
	Total		25	10	—	—	—	—	600	22

Elective 2		Credit
CSC3E08 - Digital Image Processing		4
CSC3E09 - Wireless and Sensor Networks		4
CSC3E10 - Cryptography and Network Security		4
CSC3E11 - Remote Sensing and GIS		4
CSC3E12 - Digital Image Forensics		4
Elective 3		Credit
CSC3E13 - Soft Computing Techniques		4
CSC3E14 - Data Warehousing and Data Mining		4
CSC3E15 - Information Retrieval Systems		4
CSC3E16 - Data Analytics Using Python		4
CSC3E17 - Advanced Machine Learning		4
CSC3E18 - Advanced Java Programming		4

Semester 4

Sl.No.	Course Code	Course	Instructional Hrs/week		Exam Duration		Marks			Credit
			Lect/Lab	Tutorial	Theory	Practical	ESA	CA	Total	
1	CSC4C16	Software Engineering	3	1	3	—	80	20	100	4
2	CSC4E19-27	Elective 4	3	1	3	—	80	20	100	4
			Duration of the Project				Viva voce	CA	Total	
3	CS3C17	Project Work & dissertation	16 Weeks			400	300	100		8
	Total		6	2	—	—	—	—	600	16

Elective 4	Credit
CSC4E19 - Pattern Recognition	4
CSC4E20 - Natural Language Processing	4
CSC4E21 - Bio Informatics	4
CSC4E22 - Mobile Communication	4
CSC4E23 - Semantic Web Technology	4
CSC4E24 - Virtualization and Cloud Computing	4
CSC4E25 - Storage Area Network	4
CSC4E26 - Software Development for Portable Devices	4
CSC4E27 - Fundamentals of Big Data	4



AQAR 2020-21

PHYSICS

Criterion I - Curricular Aspects

SUB CRITERION -1.2.1 - Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented

UNIVERSITY OF CALICUT

B.Sc. PHYSICS

(CORE AND COMPLEMENTARY PROGRAMMES)

SYLLABUS & MODEL QUESTION PAPERS

w.e.f 2019 admission onwards

CBCSSUG Regulations 2019

B.Sc. PHYSICS
CORE & COMPLEMENTARY PROGRAMMES
SYLLABUS

PROGRAMME: B.Sc. PHYSICS

Programme Specific Outcomes

PSO1: Understand the basic concepts of methodology of science and the fundamentals of mechanics, properties of matter and electrodynamics

PSO2: Understand the theoretical basis of quantum mechanics, relativistic physics, nuclear physics, optics, spectroscopy, solid state physics, astrophysics, statistical physics, photonics and thermodynamics

PSO3: Understand and apply the concepts of electronics in the designing of different analog and digital circuits

PSO4: Understand the basics of computer programming and numerical analysis

PSO5: Apply and verify theoretical concepts through laboratory experiments

Abbreviations used:

CL – Cognitive level; **U** – understand; **Ap** – apply; **An** – analyze; **C** - create

KC – Knowledge category; **C** – conceptual; **F** – factual; **P** - procedural

B.Sc. DEGREE PROGRAMME (PHYSICS CORE)

COURSE STRUCTURE

Semester	Course Code	Course Title	Total hours	Hours/Week	Credits
1	A 01	Common Course I – English	72	4	4
	A 02	Common Course II – English	90	5	3
	A 07	Common Course III – Language other than English	72	4	4
	PHY1 B01	Core course I - Methodology of Science and Basic Mechanics	36	2	2
		Core Course V - Practical I	36	2	*
		1 st Complementary Course I - Mathematics	72	4	3
		2 nd Complementary Course I	36	2	2
		2 nd Complementary Course Practical I	36	2	*
	EO1	Environment Studies	-	-	4**
		Total	450	25	18
2	A 03	Common Course IV – English	72	4	4
	A 04	Common Course V – English	90	5	3
	A 08	Common Course VI – Language other than English	72	4	4
	PHY2 B02	Core Course II - Mechanics	36	2	2
		Core Course V - Practical I	36	2	*
		1 st Complementary Course II - Mathematics	72	4	3
		2 nd Complementary Course II	36	2	2
		2 nd Complementary Course Practical II	36	2	*
	E02	Disaster Management			4**
		Total	450	25	18
3	A 05	Common Course VI – English	90	5	4
	A 09	Common Course VIII - Language other than English	90	5	4

	PHY3 B03	Core Course III – Electrodynamics-I	54	3	3
		Core Course VI– Practical I	36	2	*
		1 st Complementary Course III – Mathematics	90	5	3
		2 nd Complementary Course III	54	3	2
		2 nd Complementary Course Practical III	36	2	*
	E03	Human Rights or Intellectual Property Rights or Consumer protection			4**
		Total	450	25	16
4	A 06	Common Course IX – English	90	5	4
	A 10	Common Course X - Language other than English	90	5	4
	PHY4 B04	Core Course IV - Electrodynamics II	54	3	3
	PHY4 B05	Core Course Practical V – Practical I	36	2	5
		1 st Complementary Course IV– Mathematics	90	5	3
		2 nd Complementary Course IV	54	3	2
		2 nd Complementary Course Practical IV	36	2	4
	E04	Gender studies or Gerontology			4**
	Total	450	25	25	
5	PHY5 B06	Core Course VI - Computational Physics	54	3	3
	PHY5 B07	Core Course VII - Quantum Mechanics	54	3	3
	PHY5 B08	Core Course VIII - Optics	54	3	3
	PHY5 B09	Core Course IX- Electronics (Analog and Digital)	54	3	3
		Open Course – (<i>course from other streams</i>)	54	3	3
		Core Course Practical XIV - Practical II	72	4	*
		Core Course Practical XV- Practical III	72	4	*
		Core Course XVII Project/Research methodology	36	2	*
		Total	450	25	15
6	PHY6 B10	Core Course X - Thermodynamics	54	3	3
	PHY6 B11	Core Course XI -Statistical Physics, Solid State Physics, Spectroscopy and Photonics	54	3	3
	PHY6 B12	Core Course XII - Nuclear Physics and Particle Physics	54	3	3

	PHY6 B13	Core Course XIII - Relativistic Mechanics and Astrophysics	54	3	3
	PHY6 B14	Core Course XIV (Elective:EL1 / EL2 / EL3)	54	3	3
	PHY6 B15	Core Course Practical XV – Practical II	72	4	5
	PHY6 B16	Core Course Practical XVI – Practical III	72	4	5
	PHY6 B17 (P/R)	Core Course XVII Project/Research methodology Tour report	36	2	2 1
		Total	450	25	28
Total Credits					120

Tour report shall be evaluated with Practical III

*Credit for practical / project to be awarded only at the end of Semester 4 and Semester 6.

**Mandatory audit courses for the program, but not counted for the calculation of SGPA or CGPA.

Student can attain only pass (Grade P) for these courses.

CREDIT AND MARK DISTRIBUTION IN EACH SEMESTERS

Total Credits: 120; Total Marks: 3075

<i>Semester</i>	<i>Course</i>	<i>Credit</i>	<i>Marks</i>
1	Common course: English	4	100
	Common course: English	3	75
	Common course: Additional Language	4	100
	Core Course I: Methodology of Science and Basic Mechanics	2	75
	Complementary course: Mathematics	3	75
	Complementary course: II	2	75
	Total	18	500
2	Common course: English	4	100
	Common course: English	3	75
	Common course: Additional Language	4	100
	Core Course II: Mechanics	2	75
	Complementary course: Mathematics	3	75
	Complementary course: II	2	75
	Total	18	500
3	Common course: English	4	100
	Common course: Additional Language	4	100
	Core Course III: Electrodynamics-I	3	75
	Complementary course: Mathematics	3	75
	Complementary course: II	2	75
	Total	16	425
4	Common course: English	4	100
	Common course: Additional Language	4	100
	Core Course IV: Electrodynamics-II	3	75
	Core Course V: Physics Practical 1	5	100
	Complementary course: Mathematics	3	75
	Complementary course: II	2	75
	Complementary course: II Practical	4	100
Total	25	625	
5	Core Course VI: Computational Physics	3	75
	Core Course VII :Quantum Mechanics	3	75
	Core Course VIII: Optics	3	75
	Core Course IX: Electronics (Analog and Digital)	3	75
	Open course	3	75
	Total	15	375

6	Core Course X: Thermodynamics	3	75
	Core Course XI: Statistical Physics, Solid State Physics, Spectroscopy and Photonics	3	75
	Core Course XII: Nuclear Physics and Particle Physics	3	75
	Core Course XIII: Relativistic mechanics and Astrophysics	3	75
	Core Course XIV: Elective (EL1 / EL2 / EL3)	3	75
	Core Course XV: Practical II	5	100
	Core Course XVI: Practical III	5	100
	Core Course XVII: Project/Research Methodology	2	60
	Tour report	1	15
	Total	28	650
Grand Total	120	3075	

COURSE STRUCTURE PHYSICS(CORE)

Credit Distribution

Semester	Common course		Core course	Complementary course		Open course	Total
	English	Additional Language		Mathematics	Comple. II		
2	4+3	4	2	3	2	-	18
3	4	4	3	3	2	-	16
4	4	4	3+5*	3	2+4*	-	25
5	-	-	3+3+3+3	-	-	3	15
6	-	-	3+3+3+3+3 +5*+5*+3**	-	-	-	28
Total	22	16	55	12	12	3	120

*Practical **Project

Tour Report to be evaluated with Practical Paper III

Mark Distribution and Indirect Grading System

Indirect grading system is to be followed for examinations of all courses. After external and internal evaluations marks are entered in the answer scripts. All other calculations, including grading, will be done by the university using the software. Indirect Grading System in 8 point scale is followed. Each course is evaluated by assigning marks with a letter grade (O, A⁺, A, B+, B, C, P or F to that course by the method of indirect grading.

Mark Distribution

Sl. No.	Course	Marks
1	English	550
2	Additional Language	400
3	Core course: Physics	1350
4	Complementary course I: Mathematics	300
5	Complementary course II: Chemistry/....	400
6	Open Course	75
	Total Marks	3075

Eight point Indirect Grading System

% of Marks	Grade	Interpretation	Grade Point Average	Range of Grade points	Class
95 and above	O	Outstanding	10	9.5 - 10	First Class with distinction
85 to below 95	A ⁺	Excellent	9	8.5 - 9.49	
75 to below 85	A	Very good	8	7.5-8.49	
65 to below 75	B ⁺	Good	7	6.5 - 7.49	First Class
55 to below 65	B	Satisfactory	6	5.5 - 6.49	Second Class
45 to below 55	C	Average	5	4.5 - 5.49	
35 to below 45	P	Pass	4	3.5 - 4.49	Third class
Below 35	F	Fail	0	0 - 3.49	Fail

Core Course Structure
Total Credits: 56 (Internal: 20%; External: 80%)

<i>Semester</i>	<i>Code No</i>	<i>Course Title</i>	<i>Hours/Week</i>	<i>Total Hours</i>	<i>Credit</i>	<i>Marks</i>	
1	PHY1B01	Core Course I: Methodology of Science and Basic Mechanics	2	36	2	75	
	-	Core Course V : Practical-I	2	36	-*	-	
2	PHY2B02	Core Course II: Mechanics	2	36	2	75	
	-	Core Course V : Practical-I	2	36	-*	-	
3	PHY3B03	Core Course III: Electrodynamics-I	3	54	3	75	
	-	Core Course V : Practical-I	2	36	-*	-	
4	PHY4B04	Core Course IV: Electrodynamics-II	3	54	3	75	
	PHY4B05	Core Course V : Practical-I	2	36	5	100	
5	PHY5B06	Core Course VI: Computational Physics	3	54	3	75	
	PHY5B07	Core Course VII: Quantum Mechanics	3	54	3	75	
	PHY5B08	Core Course VIII: Optics	3	54	3	75	
	PHY5B09	Core Course IX: Electronics (Analog and Digital)	3	54	3	75	
		Core Course XIV: Practical II	4	72	-**	-	
		Core Course XV: Practical III	4	72	-**	-	
		Core Course XVI: Project Work	2	36	-**	-	
6	PHY6B10	Core Course X: Thermodynamics	3	54	3	75	
	PHY6B11	Core Course XI: Statistical Physics, Solid State Physics, Spectroscopy and Photonics	3	54	3	75	
	PHY6B12	Core Course XII: Nuclear Physics and Particle Physics	3	54	3	75	
	PHY6B13	Core Course XIII Relativistic mechanics and Astrophysics	3	54	3	75	
	PHY6B14 (EL1)	Core Course XIV: Elective ***	1. Biomedical Physics	3	54	3	75
	PHY6B14 (EL2)		2. Nanoscience and Technology				
	PHY6B14 (EL3)		3. Materials Science				
	PHY6B15	Core Course XV: Practical -II	4	72	5**	100	
	PHY6B16	Core Course XVI: Practical-III	4	72	5**	100	
	PHY6B17 (P/R)	Core Course XVII: Project Work /Research Methodology and Tour Report	2 1	36	3**	60 15	
Total					56	1350	

* Exam will be held at the end of 4th semester

** Exam will be held at the end of 6th semester

*** An institution can choose any one among the three courses.

CORE COURSE THEORY: EVALUATION SCHEME

The evaluation scheme for each course contains two parts: viz., internal evaluation and external evaluation. Maximum marks from each unit are prescribed in the syllabus.

1. INTERNAL EVALUATION

20% of the total marks in each course are for internal evaluation. The colleges shall send only the marks obtained for internal examination to the university.

Table 1: Components of Evaluation (Theory)

<i>Sl. No.</i>	<i>Components</i>	<i>Marks for 4/5 credits papers</i>	<i>Marks for 2/3 credits papers</i>
1	Class room participation based on attendance	4	3
2	Test paper: I	8	6
3	Assignment	4	3
4	Seminar/ Viva	4	3
<i>Total Marks</i>		20	15

Table 2: Pattern of Test Papers

<i>Duration</i>	<i>Pattern</i>	<i>Total number of questions</i>	<i>Number of questions to be answered</i>	<i>Marks for each question</i>	<i>Marks</i>
2 Hours	Short answer	12	10-12	2	20
	Paragraph/problem	7	6-7	5	30
	Essay	2	1	10	10
<i>Total Marks*</i>					60

*90% and above = 6, 80 to below 90% = 5.5, 70 to below 80% = 5, 60 to below 70% = 4.5, 50 to below 60% = 4, 40 to below 50% = 3.5, 35 to below 40% = 3, 25 to below 30% = 2.5, 15 to below 20 = 2, less than 15 = 0

2. EXTERNAL EVALUATION

External evaluation carries 80% marks. University examinations will be conducted at the end of each semester.

Table 1: Pattern of Question Paper

<i>Duration</i>	<i>Pattern</i>	<i>Total number of questions</i>	<i>Number of questions to be answered</i>	<i>Marks for each question</i>	<i>Marks</i>
2 Hours	Short answer	12	10-12	2	20
	Paragraph/problem	7	6-7	5	30
	Essay	2	1	10	10
<i>Total Marks</i>					60

CORE COURSE PROJECT: EVALUATION SCHEME

Project evaluation will be conducted at the end of sixth semester.

Project:

1. Project work should be done as an extension of topics in the syllabus.
2. Project can be experimental / theoretical or done in collaboration (association) with a recognized laboratory or organization.
3. Project work may be done individually or as group of maximum of six students.
4. A supervisor has to guide a batch of maximum 24 students. For an additional batch another supervisor has to be appointed. However the existing work load should be maintained.

Guidelines for doing project:

The project work provides the opportunity to study a topic in depth that has been chosen or which has been suggested by a staff member. The students first carryout a literature survey which will provide the background information necessary for the investigations during the research phase of the project.

The various steps in project works are the following:-

- a) Wide review of a topic.
- b) Investigation on an area of Physics in systematic way using appropriate techniques.
- c) Systematic recording of the work.
- d) Reporting the results with interpretation in documented and oral forms.

Use of Log Book

- During the Project the students should make regular and detailed entries in to a personal laboratory log book through the period of investigation.
- The log book will be a record of progress on project and will be useful in writing the final report. It contains experimental conditions and results, ideas, mathematical expressions, rough work and calculation, computer file names etc. All entries should be dated.
- The students are expected to have regular meeting with their supervisor to discuss progress on the project and the supervisor should regularly write brief comments with dated signature.
- **The log book and the written report must be submitted at the end of the project.**

Table 1: Internal Evaluation

<i>Sl. No</i>	<i>Criteria</i>	<i>Marks</i>
1	Punctuality & Log book	2
2	Skill in doing project work/data	2
3	Scheme Organization of Project Report	3
4	Viva-Voce	5
<i>Total Marks</i>		12

Table 2: External Evaluation

Individual presentation is compulsory and individual Log book should be submitted

<i>Sl. No</i>	<i>Criteria</i>	<i>Marks</i>
1	Content and relevance of the project, Methodology, Reference, Bibliography	8
2	Project Presentation, Quality of analysis, statistical tools, findings, recommendations	10
3	Project Report (written copy) and Log Book	10
4	Viva-voce	20
<i>Total Marks</i>		48

STUDY TOUR Internal 5 marks

Minimum two days visit to National research Institutes, Laboratories and places of scientific importance are mandatory. **Study tour report** has to be submitted with photos and analysis along with Practical Paper III for evaluation

Distribution of marks EXTERNAL

No	Items	External (15)
1	Documented Report	8
2	Outcome/Analysis	4
3	Photos (five photos)	3
TOTAL		15

CORE COURSE: PRACTICAL EVALUATION SCHEME

Internal		External		
Items	Marks	Items	Marks	Marks for Python Programming
Record	4	Record with 20 experiments Max.one mark for each experiment	10	10
Regularity in doing the experiment	4	Formulae, Theory, Principle/ Programme	22	15
Attendance	4	Adjustments& setting / Algorithm	14	15
Test 1	4	Tabulation, Observation and performance/ Execution	20	24
Test 2	4	Calculation, result, graph, unit/ Result	10	12
		Viva	4	4
Total	20	Total	80	80

CORE COURSE – XIII (ELECTIVE) :

1	PHY6 B14 (EL1)	BIOMEDICAL PHYSICS
2	PHY6 B14 (EL2)	NANO SCIENCE AND TECHNOLOGY
3	PHY6 B14 (EL3)	MATERIALS SCIENCE

**OPEN COURSES OFFERED BY PHYSICS DEPARMENT
(For students from other streams)**

1	PHY5 D01(1)	NON CONVENTIONAL ENERGY SOURCES
2	PHY5 D01(2)	AMATEUR ASTRONOMY AND ASTROPHYSICS
3	PHY5 D01(3)	ELEMENTARY MEDICAL PHYSICS

PHYSICS COMPLEMENTARY COURSE STRUCTURE

Total Credits: 12 (Internal: 20%; External: 80%)

<i>Semester</i>	<i>Code No</i>	<i>Course Title</i>	<i>Hours/ Week</i>	<i>Total Hours</i>	<i>Credit</i>	<i>Marks</i>
1	PHY1C01	Complementary Course I: Properties of matter and Thermodynamics	2	36	2	75
	-	Complementary Course V: PHYSICS Practical	2	36	-*	-
2	PHY2C02	Complementary Course II: Optics ,Laser, Electronics	2	36	2	75
	-	Complementary Course V: PHYSICS Practical	2	36	-*	-
3	PHY3C03	Complementary Course III: Mechanics, Relativity, Waves and Oscillations	3	54	2	75
	-	Complementary Course V: PHYSICS Practical	2	36	-*	-
4	PHY4C04	Complementary Course IV: Electricity ,Magnetism and Nuclear Physics	3	54	2	75
	PHY4C05	Complementary Course V: PHYSICS Practical	2	36	4*	100
Total					12	400

* Examination will be held at the end of 4th semester

COMPLEMENTARY COURSE THEORY: EVALUATION SCHEME

The evaluation scheme for each course contains two parts: *viz.*, internal evaluation and external evaluation. Maximum marks from each unit are prescribed in the syllabus.

1. INTERNAL EVALUATION

20% of the total marks in each course are for internal evaluation. The colleges shall send only the marks obtained for internal examination to the university.

Table 1: Components of Evaluation

<i>Sl. No.</i>	<i>Components</i>	<i>Marks for 2/3 credits papers</i>
1	Class room participation based on attendance	3
2	Test paper: I	6
3	Assignment	3
4	Seminar/ Viva	3
<i>Total Marks</i>		15

Table 2: Pattern of Test Papers

<i>Duration</i>	<i>Pattern</i>	<i>Total number of questions</i>	<i>Number of questions to be answered</i>	<i>Marks for each question</i>	<i>Marks</i>
2 Hours	Short answer	12	10-12	2	20
	Paragraph/problem	7	6-7	5	30
	Essay	2	1	10	10
<i>Total Marks*</i>					60

*90% and above = 6, 80 to below 90% = 5.5, 70 to below 80% = 5, 60 to below 70% = 4.5, 50 to below 60% = 4, 40 to below 50% = 3.5, 35 to below 40% = 3, 25 to below 30% = 2.5, 15 to below 20 = 2, less than 15 = 0

2. EXTERNAL EVALUATION

External evaluation carries 80% marks. University examinations will be conducted at the end of each semester.

Table 1: Pattern of Question Papers

<i>Duration</i>	<i>Pattern</i>	<i>Total number of questions</i>	<i>Number of questions to be answered</i>	<i>Marks for each question</i>	<i>Marks</i>
2 Hours	Short answer	12	10-12	2	20
	Paragraph/problem	7	6-7	5	30
	Essay	2	1	10	10
<i>Total Marks</i>					60

Practical Evaluation (Complementary)

Internal		External	
Record	4	Record with 20 experimrnts. Max. ½ mark for one expt.	10
Regularity	4	Formulae, Theory, Principle	22
Attendance	4	Adjustments, setting	14
Test I	4	Tabulation & Observation	20
Test II	4	Calculation, graph, result, unit	10
		Viva	4
Total	20	Total	80

OPEN COURSE STRUCTURE
(FOR STUDENTS OTHER THAN B.Sc. Physics)
Total Credits: 2 (Internal 20%; External 80%)

<i>Semester</i>	<i>Code No</i>	<i>Course Title</i>	<i>Hours/Week</i>	<i>Total Hours</i>	<i>Marks</i>
5	PHY5D01(1)	Open Course 1: Non conventional Energy Sources	3	54	75
	PHY5D01(2)	Open Course 2: Amateur Astronomy and Astrophysics			
	PHY5D01(3)	Open Course 3: Elements of Medical Physics			

OPEN COURSE: EVALUATION SCHEME

The evaluation scheme contains two parts: *viz.*, internal evaluation and external evaluation.

Maximum marks from each unit are prescribed in the syllabus.

Problems are not required

1. INTERNAL EVALUATION

20% of the total marks are for internal evaluation. The colleges shall send only the marks obtained for internal examination to the university.

Table 1: Components of Evaluation

<i>Sl. No.</i>	<i>Components</i>	<i>Marks for 2/3 credits papers</i>
1	Class room participation based on attendance	3
2	Test paper: I	6
3	Assignment	3
4	Seminar/ Viva	3
<i>Total Marks*</i>		15

Table 2: Pattern of Test Papers (Internal)

<i>Duration</i>	<i>Pattern</i>	<i>Total number of questions</i>	<i>Number of questions to be answered</i>	<i>Marks for each question</i>	<i>Marks</i>
2 Hours	Short answer	12	10-12	2	20
	Paragraph/problem	7	6-7	5	30
	Essay	2	1	10	10
<i>Total Marks*</i>					60

*90% and above = 6, 80 to below 90% = 5.5, 70 to below 80% = 5, 60 to below 70% = 4.5, 50 to below 60% = 4, 40 to below 50% = 3.5, 35 to below 40% = 3, 25 to below 30% = 2.5, 15 to below 20 = 2, less than 15 = 0

2. EXTERNAL EVALUATION

External evaluation carries 80% marks. University examination will be conducted at the end of 5th semester.

Table 1: Pattern of Question Paper

<i>Duration</i>	<i>Pattern</i>	<i>Total number of questions</i>	<i>Number of questions to be answered</i>	<i>Marks for each question</i>	<i>Marks</i>
2 Hours	Short answer	12	10-12	2	20
	Paragraph/problem	7	6-7	5	30
	Essay	2	1	10	10
<i>Total Marks</i>					60



UNIVERSITY OF CALICUT

Abstract

M.Sc Programme in Physics-Credit Semester System PG(CUCSS-PG-2010)-Affiliated Colleges-Modified Scheme and Syllabus -approved -implemented-w.e.f 2017 admissions-Orders issued.

G & A - IV - J

U.O.No. 10035/2017/Admn

Dated, Calicut University.P.O, 10.08.2017

- Read:-*
1. U.O.No. GA IV/J1/1373/08 dated 23.07.2010.
 2. U.O.No. GA IV/J2/4170/10 dated 26.07.2010.
 3. U.O.No. 2071/2013/CU Dated, 13.06.2013
 4. Item No.1 of the minutes of the meeting of Board of Studies in Physics held on 13.03.2017
 5. Item No.I in the minutes of the meeting of Faculty of Science held on 10.07.2017
 6. Item No. II(H) in the minutes of the LXXVI meeting of the Academic Council held on 17.07.2017
 7. Orders of the Vice-Chancellor in the file No.191466/GA IV/J1/2013/CU dated 27.07.2017

ORDER

The Credit Semester System was implemented for Post Graduate Programmes in affiliated colleges under University of Calicut w.e.f 2010 admissions, vide paper read first above.

The Scheme and Syllabus of M.Sc programme in Physics under Credit Semester System was implemented in affiliated colleges with effect from 2010 admissions, vide paper read second and the same had been modified with effect from 2012 admissions, vide paper read third.

Vide paper read fourth, the Board of Studies in Physics PG has approved the modified Scheme and Syllabus for M.Sc programme in Physics, under Credit Semester System in affiliated colleges w.e.f 2017 admissions.

Faculty of Science vide paper read fifth and the Academic Council vide paper read sixth above have approved the recommendations of the Board.

The Hon'ble Vice-Chancellor, has accorded sanction to implement the resolutions of the Academic Council vide paper read seventh above.

Sanction has, therefore, been accorded for implementing the modified Scheme and Syllabus of M.Sc Programme in Physics under Credit Semester System (CUCSS-PG-2010) in affiliated colleges w.e.f 2017 admissions.

Orders are issued accordingly.

(Scheme and Syllabus appended)

Vasudevan .K

Assistant Registrar

To

Affiliated Colleges offering M.Sc. Physics.
Copy to: Pareeksha Bhavan

Forwarded / By Order

Section Officer



UNIVERSITY OF CALICUT

Scheme and Syllabus for
M.Sc. (Physics) Programme (CSS)
for affiliated colleges, w.e.f. **2017** admissions

The duration of the M.Sc (Physics) programme shall be 2 years, split into 4 semesters. Each course in a semester has 4 credits (4C) and Practicals having 3 credits (3C). The total credits for the entire programme is 80. The scheme and syllabus of the programme, consisting of sections (a) *Courses in various semesters* (b) *Constitution of elective clusters* (c) *The Credits and Hours per week* (d) *Grading and Evaluation* (e) *Detailed syllabus* (f) *Pattern of question papers* are as follows:

A) COURSES IN VARIOUS SEMESTERS

Semester – I (16C)

- (PHY1C01) Classical Mechanics (4C)
- (PHY1C02) Mathematical Physics – I (4C)
- (PHY1C03) Electrodynamics and Plasma Physics (4C)
- (PHY1C04) Electronics (4C)
- (PHY1P01) General Physics Practical -I
- (PHY1P02) Electronics Practical – I

Semester – II (22C)

- (PHY2C05) Quantum Mechanics -I
- (PHY2C06) Mathematical Physics – II (4C)
- (PHY2C07) Statistical Mechanics (4C)
- (PHY2C08) Computational Physics (4C)
- (PHY2P03) General Physics Practical - II (3C)
- (PHY2P04) Electronics Practical – II (3C)

External Practical Exam for PHY1P01&PHY2P03, PHY1P02&PHY2P04

Semester -III (16C)

- (PHY3C09) Quantum Mechanics -II (4C)
- (PHY3C10) Nuclear and Particle Physics (4C)
- (PHY3C11) Solid State Physics (4C)
- Elective -I (4C)
- (PHY4Pr) Project
- (PHY3P05) Modern Physics Practical -I

Semester -IV (26C)

(PHY4C12) Atomic and Molecular Spectroscopy (4C)
Elective -II (4C)
Elective -III (4C)
(PHY4Pr1) Project (4C)
(PHY4P06) Modern Physics Practical –II (3C)
(PHY4P07) Computational Physics Practical (3C)
Viva Voce (Comprehensive) (4C)

External Practical Exam. for PHY3P05 & PHY4P06, PHY4P07 and
Comprehensive Viva Voce.

B) CONSTITUTION OF CLUSTERS

Elective -I Cluster:

(PHY3E01) Plasma Physics
(PHY3E02) Advanced Quantum Mechanics
(PHY3E03) Radiation Physics
(PHY3E04) Digital Signal Processing
(PHY3E05) Experimental Techniques
(PHY3E06) Elementary Astrophysics

Elective -II Cluster:

(PHY4E07) Advanced Nuclear Physics
(PHY4E08) Advanced Astrophysics
(PHY4E09) Astrophysics and Astronomical Data Analysis
(PHY4E10) Advanced Statistical Mechanics
(PHY4E11) Materials Science
(PHY4E12) Electronic Instrumentation
(PHY4E13) Laser Systems, Optical Fibres and Applications
(PHY4E14) Communication Electronics

Elective -III Cluster:

(PHY4E15) Quantum Field Theory
(PHY4E16) Chaos and Nonlinear Physics
(PHY4E17) Advanced Condensed Matter Physics
(PHY4E18) Modern Optics
(PHY4E19) Physics of Semiconductors
(PHY4E20) Microprocessors and Applications

C) THE CREDITS AND HOURS PER WEEK

The credits and hours proposed for various courses in different semesters are as given under.

Semester	No. of Theory Papers	Practicals	Theory		Practical		Project		Seminar	Viva Cred.	Total hours	Total Cred
			Hrs	Cred	Hrs	Cred	Hrs	Cred				
I	4	1. Gen. Phy 2. Electronics	16	16	8	0	0	0	1	0	25	16
II	4	1. Gen. Phy 2. Electronics	16	16	8	6	0	0	1	0	25	22
III	4	1. Mod. Phy	16	16	4	0	4	0	1	0	25	16
IV	3	1. Mod Phy 2. Comp. Phy	12	12	8	6	4	4	1	4	25	26
Total Credits for the Programme												80

D) GRADING AND EVALUATION

- 1) Accumulated minimum credit required for successful completion of the course shall be 80.
- 2) A project work of 4 credit is compulsory and it should be done in III & IV semesters. Also a comprehensive Viva Voce may be conducted by external examiners at the end of IV Semester and carries 4 credits.
- 3) Evaluation and Grading :
All grading starting from the evaluation of papers is done on 5 point scale (A, B, C, D, E) and SGPA and CGPA – between 0 to 4 and in two decimal points. An overall letter grade (Cumulative Grade) for the whole programme shall be awarded to the student based on the value of CGPA using a 7-point scale given below.

Overall Grade in a Programme

CGPA	Overall Letter Grade
3.80 to 4.00	A+
3.50 to 3.79	A
3.00 to 3.49	B+
2.50 to 2.99	B
2.00 to 2.49	C+

1.50 to 1.99	C
1.00 to 1.49	D

(4) Weightage of Internal and External valuation:

The evaluation scheme for each course shall contain two parts (1) internal evaluation (2) external evaluation. Its weightages are as follows:

<i>Evaluation</i>	<i>Weightage</i>
Internal	1 (or 25%)
External	3 (or 75%)

Both internal and external evaluation will be carried out using Direct Grading System

(5) Internal evaluation (must be transparent and fair):

Theory:

- a) Tests- wt = 2 (at least 2 tests with 50% Problems)
- b) Tutorial on assignments and Exercises-wt =1
- c) Seminars and Viva Voce- wt =1
- d) Attendance - wt =1

Practical:

- a) Tests - wt=2
- b) Lab. skill/quality of their results- wt =1
- c) Viva Voce- wt =1

Project:

- a) Monthly progress - wt =2
- b) Regularity and attendance -wt =1
- c) Seminar and Viva Voce- wt =1

6) External evaluation:

a) **Theory:** Every semester

Pattern of question Papers

<i>Division</i>	<i>Type</i>	<i>No. of Questions</i>	<i>Weightage</i>	<i>Total Weightage</i>
Part A	Short Answer	12 (No Choice)	1	12
Part B	Essay	2 out of 4	6	12
Part C	Problems	4 out of 6	3	12
Total weightage for a question paper				36

Answer to each question may be evaluated based on

- a) Idea/knowledge – wt =1
- b) Logic/steps – wt =1
- c) Analytic skill – wt =1
- d) Correctness – wt =1

b) Practicals: At the end of II and IV semesters.

c) Project: End of IV semester. Its evaluation is based on:

- (a) Presentation – wt =3

(b) Project Report – wt =2

(c) Project Viva – wt =1

d) Comprehensive Viva-Voce at the end of IV semester.

(7) Theory papers must contain at least 4 lectures plus 1 Tutorial. Project is equivalent to one theory papers (6 hours) and one practical (8 hours).

(8) Directions for question paper setters:

Part A: Set each questions to be answered in 5 minutes duration and should extract the critical knowledge acquired by the candidate in the subject.

Part B: 30 minutes answerable questions each. May be asked as a single question or parts. Derivation type questions can be also asked.

Part C: 15 minutes answerable questions each and as far as possible avoid numerical type questions.



AQAR 2020-21

COMMERCE

Criterion I - Curricular Aspects

SUB CRITERION -1.2.1 - Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented



UNIVERSITY OF CALICUT

Abstract

General and Academic - CBCSS UG Regulations 2019 - Choice Based Credit Semester System - Regulations for all UG Programmes under CBCSS - Regular and SDE/Private Registration - w.e.f. 2019 admissions - Modification in Clause 4.5 and 13.2 - Approved - Implemented - Orders issued

G & A - IV - J

U.O.No. 10662/2020/Admn

Dated, Calicut University.P.O, 13.11.2020

- Read:-*1. U.O No. GA I/J2/3601/08(Vol.II) dated 19.06.2009
2. U.O.No. 3797/2013/CU dated 07.09.2013
3. U.O No. 4368/2019/Admn dated 23.03.2019
4. U.O No. 15324/2019/Admn dated 30.10.2019
5. U.O No. 18084/2019/Admn dated 28.12.2019
6. U.O.No. 443/2020/Admn dated 14.01.2020
7. U.O.No. 664/2020/Admn dated 18.01.2020
8. Item No. 1 in the minutes of the Steering Committee on CBCSS UG 2019 held on 14.09.2020
9. Item No. I.18 in the minutes of the LXXXI meeting of Academic Council held on 01.10.2020

ORDER

1. As per the paper read (1) above, 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. Vide paper read (2) above, 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.
2. Vide paper read (3) above, the Regulations for Choice Based Credit and Semester System for Under Graduate (UG) Curriculum - 2019 (CBCSS UG Regulations 2019) for all UG Programmes under CBCSS Regular and SDE/Private Registration in the University of Calicut, with effect from 2019 admissions has been implemented and the same has been modified vide paper read (4) and (5) above.
3. Vide paper read (6) above, orders were issued, implementing the recommendation of Steering Committee on CBCSS UG 2019 as follows :

"Undergraduate degree holders in any scheme/pattern can register for additional degrees through SDE/Private Registration, provided they satisfy the eligibility criteria of the degree they apply for. Additional degree candidates have to register in first semester itself through SDE/Private Registration and have to follow the stipulations fixed for the programmes in SDE/Private Registration. No course shall be exempted to the additional degree candidates. It is also recommended to modify all the existing U.Os with regard to the conduct of additional degree through SDE/Private Registration".
4. Vide paper read (7) above, orders were issued, granting permission to continue the existing pattern of Common Courses A02 and A03 in Arabic instead of English for BA Afzal-UI -Ulama Programme.

5. Vide paper read (8) above, Steering Committee on CBCSS UG 2019 recommended that "The programmes which have already running under Language Reduced Pattern (LRP) pattern, can continue as per the LRP pattern and to include them in the existing UG Regulations" and the same has been approved by the Academic Council vide paper read (9) above. The Vice-chancellor has ordered, on 25.10.2020, to implement the resolution of the Academic Council
6. Sanction is, therefore, accorded to implement the modified CBCSS UG Regulations 2019 implemented vide paper read as (5) above, by including the following modifications :

- The condition that "For BA Afzal-UI-Ulama Programme, Common Courses A02 and A03 are in Arabic instead of English" to be included in **Clause 4.5** in the CBCSS UG Regulations 2019.
- The following programmes which are already running under Language Reduced Pattern (LRP) are also included in the list of subjects under LRP Programmes, in **Clause 4.5** in the CBCSS UG Regulations 2019 :

1. B.Sc Applied Physics - Group 3
2. B.Sc Environmental Science & Water Management - Group 4
3. B.Sc Genetics - Group 4
4. B.Sc Microbiology - Group 4
5. BA Graphic Design and Animation - Group 5

- **Clause 13.2** shall be modified as, "Undergraduate degree holders in any scheme/pattern can register for additional degree through SDE/Private Registration, provided, they satisfy the eligibility criteria of the degree they apply for. Additional degree candidates have to register in first semester itself through SDE/Private Registration and have to follow the stipulations fixed for the programmes in SDE/Private Registration. No courses shall be exempted to the additional degree candidates".

7. Orders are issued accordingly. (Modified Regulations appended)

Arsad M

Assistant Registrar

To

The Principals/Heads of all affiliated Colleges/Institutions/Departments under the University of Calicut

Copy to: Director SDE/ PS to VC/PA to R/PA to CE/GA IV B,C & E Sections/GA I F Section/CHMK Library/SF/DF/FC

Forwarded / By Order

Section Officer



UNIVERSITY OF CALICUT

**REGULATIONS FOR
CHOICE BASED CREDIT AND
SEMESTER SYSTEM FOR UNDER
GRADUATE (UG) CURRICULUM -2019
(CBCSSUG 2019)**

PREFACE

Global forces are combining to fabricate rapid and profound changes on a heretofore unknown scale, that too, in fathomless velocity, leaving none of our systems unscathed, including the global system of higher education. Higher education system, globally, is being placed in an entirely different setting, with the pervading of market, offering a competing paradigm and restructuring the interplay between the Market, the State and the Universities at the advent of globalization.

New terminologies such as 'Borderless Education', 'Cross border Education', '*Transnational* and *Transborder* Education', 'internationalization' and 'commoditization' of education etc., have become a few catch words in this era of liberalisation. Higher Education ceases to be a 'common good' and is being swiftly transformed to be an internationally traded commodity. In all modern societies, universities are considered as the 'knowledge factories'.

The Indian system of higher education has unleashed major program of reforms in the event of the changes witnessed in the system. Many of these reforms can be traced back to a policy template provided by the National Knowledge Commission (NKC). In purview with such reforms, the University Grants Commission (UGC) has made concurrent changes with regard to the higher education system. One such change was the introduction of CBCSS or 'Choice based Credit Semester and grading pattern'. The UGC directed all the Universities in the country to restructure undergraduate courses on 'Choice based Credit Semester and Grading pattern' in 2009-10 academic year. **Recommendation of the UGC in its *Action Plan for Academic and Administrative Reforms makes it clear that* "..... Curricular flexibility and learners' mobility is an issue that warrants our urgent attention. These can be addressed by introducing credit based courses and credit accumulation. In order to provide with some degree of flexibility to learners, we need to provide for course duration in terms of credit hours and also a minimum as well as a maximum permissible span of time in which a course can be completed by a learner...Choice-Based Credit System (CBCS) imminently fits into the emerging socioeconomic milieu, and could effectively respond to the educational and occupational aspirations of the upcoming generations. In view of this, institutions of higher education in India would do well to invest thought and resources into introducing CBCS. Aided by modern communication and information technology, CBCS has a high probability to be operational efficiently and effectively elevating learners, institutions and higher education system in the country to newer heights..."**

Calicut University regulations are framed in accordance with UGC guidelines on restructuring undergraduate education from 2009-10 academic year itself. Accordingly, all affiliated colleges have restructured the regular undergraduate programs on the Choice Based Credit Semester System (CBCSS), a combination of internal and external evaluation with grading. Later the system was made applicable to the School of Distance Education too. Now, a revised regulation for the UG Choice Based Credit Semester System is being prepared for ensuring quality and learner-centeredness. It is called as the **Regulations for Choice Based Credit and Semester System for Undergraduate (UG) Curriculum -2019**. **This booklet contains the details of the new regulation.**

Regulations for Choice Based Credit and Semester System for Under Graduate (UG) Curriculum -2019

1. TITLE

These regulations shall be called “ Regulations for Choice Based Credit and Semester System for Under Graduate Curriculum 2019” (CBCSSUG 2019).

2. SCOPE, APPLICATION & COMMENCEMENT

2.1. The regulations provided herein shall apply to all Regular/SDE/Private UG programmes under various Faculties (specified in 4.1) conducted by the University of Calicut for the admissions commencing from 2019, with effect from the academic year 2019-2020.

2.2. The provisions herein supersede all the existing regulations for the regular UG programmes under various Faculties conducted by University of Calicut unless otherwise specified.

2.3. Every programme conducted under the Choice Based Credit and Semester System in a college shall be monitored by the College Council and every UG programme conducted under CBCSS UG in SDE/Private Registration shall be monitored by the Director, SDE.

3. DEFINITIONS

3.1. ‘Programme’ means the entire course of study and examinations for the award of a degree.

3.2. ‘Duration of programme’ means the time period required for the conduct of the programme. The duration of a UG degree programme shall be six semesters distributed in a period of 3 years or eight semesters in a period of 4 years.

3.3. ‘Academic Week’ is a unit of five working days in which distribution of work is organized from day one to day five, with five contact hours of one hour duration on each day. A sequence of 18 such academic weeks constitutes a semester.

3.4. ‘Semester’ means a term consisting of 18 weeks (16 instructional weeks and two weeks for examination).

3.5. ‘Course’ means a segment of subject matter to be covered in a semester.

3.6. ‘Common course’ means a course that comes under the category of courses, including compulsory English and additional language courses and a set of general courses applicable for Language Reduced Pattern (LRP) programmes, the selection of which is compulsory for all students undergoing UG programmes.

3.7. ‘Core course’ means a compulsory course in a subject related to a particular degree programme.

3.8. ‘Open course’ means a course which can be opted by a student at his/her choice.

3.9. ‘Complementary course’ means a course which is generally related to the core course.

3.10. ‘Improvement course’ is a course registered by a student for improving his/her performance in that particular course.

3.11. 'Ability Enhancement course/Audit course' is a course which is mandatory as per the directions from the Regulatory authorities like UGC, Supreme Court etc.

3.12. 'Department' means any Teaching Department in a college offering a course of study approved by the University as per the Statutes and Act of the University.

3.13. 'Department Co-ordinator' is a teacher nominated by a Dept. Council to co-ordinate all the works related to CBCSS UG undertaken in that department including continuous evaluation.

3.14. 'Department Council' means the body of all teachers of a department in a college.

3.15. 'Parent Department' means the Department which offers a particular degree programme.

3.16. 'College Co-ordinator' is a teacher nominated by the college council to co-ordinate the effective running of the process of CBCSS including internal evaluation undertaken by various departments within the college. She/he shall be the convenor for the College level monitoring committee.

3.17. College level monitoring committee. A monitoring Committee is to be constituted for CBCSSUG at the college level with Principal as Chairperson, college co-ordinator as convenor and department co-ordinators as members. The elected College union chairperson shall be a member of this committee.

3.18. 'Faculty Adviser' means a teacher from the parent department nominated by the Department Council, who will advise the student in the academic matters and in the choice of open courses.

3.19. 'Credit'(C) is a unit of academic input measured in terms of weekly contact hours/course contents assigned to a course.

3.20. 'Extra Credit' is the additional credit awarded to a student over and above the minimum credits required in a programme, for achievements in co-curricular activities and social activities conducted outside the regular class hours, as decided by the University. For calculating CGPA, extra credits will not be considered.

3.21. 'Letter Grade' or simply 'Grade' in a course is a letter symbol (O, A+, A, B+, B, C, P, F, I and Ab). Grade shall mean the prescribed alphabetical grade awarded to a student based on his/her performance in various examinations. The Letter grade that corresponds to a range of CGPA is given in Annexure-I.

3.22. Each letter grade is assigned a '**Grade point**' (**G**) which is an integer indicating the numerical equivalent of the broad level of performance of a student in a course. **Grade Point** means point given to a letter grade on 10 point scale.

3.23. 'Semester Grade Point Average' (SGPA) is the value obtained by dividing the sum of credit points obtained by a student in the various courses taken in a semester by the total number of credits in that semester. SGPA shall be rounded off to three decimal places. SGPA determines the overall performance of a student at the end of a semester.

3.24. 'Credit Point' (P) of a course is the value obtained by multiplying the grade point (G) by the credit (C) of the course: $P=G \times C$

3.25. 'Cumulative Grade Point Average' (CGPA) is the value obtained by dividing the sum of credit points in all the semesters taken by the student for the entire programme by the total number of credits in the entire programme and shall be rounded off to three decimal places.

3.26. Grade Card means the printed record of students' performance, awarded to him/her.

3.27. Course teacher: A teacher nominated by the Head of the Department shall be in charge of a particular course.

3.28. 'Dual core' means a programme with double core subjects, traditionally known as double main.

3.29. 'Strike off the roll' A student who is continuously absent for 14 days without sufficient reason and proper intimation to the Principal of the college shall be removed from the roll.

3.30. Words and expressions used and not defined in this regulation, but defined in the Calicut University Act and Statutes shall have the meaning assigned to them in the Act and Statutes.

4. PROGRAMME STRUCTURE

4.1. Students shall be admitted to UG programme under Faculty of Science, Humanities, Language & Literature, Commerce & Management, Fine Arts, Journalism and such other faculty constituted by University from time to time.

4.2. Duration: The duration of a UG programme shall be 6 semesters distributed over a period of 3 academic years. The odd semesters (1,3,5) shall be from June to October and the even semesters (2,4,6) shall be from November to March.

4.3. Courses: The UG programme shall include five types of courses, viz; Common Courses (Code A), Core courses (Code B), Complementary courses (Code C), Open Course (Code D) and Audit courses (Code E).

4.4. Course code : Each course shall have a unique alphanumeric code number, which includes abbreviation of the subject in three letters, the semester number (1 to 6) in which the course is offered, the code of the course (A to E) and the serial number of the course (01,02). The course code will be centrally generated by the university. For example: ENG2A03 represents a common course of serial number 03 offered in the second semester and PHY2B02 representing second semester Core course 2 in Physics programme.

4.5. Common Courses: In general, every UG student shall undergo 10 common courses (total 38 credits) chosen from a group of 14 common courses listed below, for completing the programme:

<i>A01. Common English Course 1</i> <i>A02. Common English Course II</i> <i>A03. Common English Course III</i> <i>A04. Common English Course IV</i>	English courses A01-A06 applicable to BA/BSC Regular pattern English courses A01-A04 applicable to Language Reduced
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A05. Common English Course V A06. Common English Course VI	Pattern (LRP) Programmes B.com, BBA, BBA (T), BBM, B.Sc (LRP), BCA etc.
A07. Additional Language Course I A08. Additional Language Course II A09. Additional Language Course III A10. Additional Language Course IV	Addl. Language courses A07-A10 applicable to BA/B.Sc Regular Pattern Addl. Language courses A07-A08 applicable to Language Reduced Pattern (LRP) Programmes
A11. General Course I A12. General Course II A13. General Course III A14. General Course IV	Applicable to Language Reduced Pattern (LRP) Programmes

Common courses A01-A06 shall be taught by English teachers and A07-A10 by teachers of additional languages respectively. For BA Afzal-Ul-Ulama Programme, Common Courses A02 and A03 are in Arabic instead of English. General courses A11-A14 shall be offered by teachers of departments offering core courses concerned.

General courses I, II, III and IV shall be designed by the group of boards concerned.

The subjects under Language Reduced Pattern (LRP) (Alternative Pattern) are grouped into five and General Courses I, II, III & IV shall be the same for each group.

1. BBA, B.Com., Fashion Technology, Hotel Management.
2. Industrial Chemistry, Polymer Chemistry, Food Science and Technology.
3. Computer Science, Electronics, Instrumentation, Printing Technology, Computer Application, Applied Physics
4. Biotechnology, Biochemistry, Aquaculture, Plant Science, Environmental Science & Water Management, Genetics, Microbiology
5. B.A Multimedia, B.A Visual Communication, B.A Film and Television, BA Graphic Design and Animation

**** Common Courses in various programmes**

No.	Programme	Semester I	Semester II	Semester III	Semester IV
1	B.A. & B.Sc	A01, A02, A07	A03, A04, A08	A05, A09	A06, A10
2	LRP	A01, A02, A07*	A03, A04, A08*	A11, A12	A13, A14

* However the existing additional language pattern shall be continued.

** The language pattern of BBA shall be the same as that of B.Com. in colleges where both the programmes exist.

4.6. Core courses: Core courses are the courses in the major (core) subject of the degree programme chosen by the student. Core courses are offered by the parent department.

4.7. Complementary courses: Complementary courses cover one or two disciplines that are related to the core subject and are distributed in the first four semesters. There shall be one complementary course in a semester for B.A Programmes. The complementary courses in first and fourth semester (Type 1) shall be the same. Similarly the complementary courses in second and third semester (Type 2) shall be the same. The college can choose any complementary course either in Type 1 or in Type 2 for a programme. Once they choose the complementary courses that should be intimated to the university. If a college wants to change

the complementary course pattern (Type 1 or Type 2) prior sanction has to be obtained. All other programmes, existing pattern will follow.

4.8. Open courses: There shall be one open course in core subjects in the fifth semester. The open course shall be open to all the students in the institution except the students in the parent department. The students can opt that course from any other department in the institution. Each department can decide the open course from a pool of three courses offered by the University. Total credit allotted for open course is 3 and the hours allotted is 3. If there is only one programme in a college, they can choose either language courses or physical education as open course.

4.9. Common and open courses under SDE/Private Registration: Existing pattern (as in CUCBCSSUG 2014) shall be followed under SDE/Private Registration.

4.10. Ability Enhancement courses/Audit courses: These are courses which are mandatory for a programme but not counted for the calculation of SGPA or CGPA. There shall be one Audit course each in the first four semesters. These courses are not meant for class room study. The students can attain only pass (Grade P) for these courses. At the end of each semester there shall be examination conducted by the college from a pool of questions (Question Bank) set by the University. The students can also attain these credits through online courses like SWAYAM, MOOC etc (optional). The list of passed students must be sent to the University from the colleges at least before the fifth semester examination. The list of courses in each semester with credits are given below.

Course with credit	Semester
Environment Studies – 4	1
Disaster Management - 4	2
*Human Rights/Intellectual Property Rights/ Consumer Protection - 4	3
*Gender Studies/Gerontology- 4	4

* Colleges can opt any one of the courses.

4.11. Extra credit Activities: Extra credits are mandatory for the programme. Extra credits will be awarded to students who participate in activities like NCC, NSS and Swatch Bharath. Those students who could not join in any of the above activities have to undergo Calicut University Social Service Programme (CUSSP). Extra credits are not counted for SGPA or CGPA.

4.12. Credits: A student is required to acquire a minimum of 140 credits for the completion of the UG programme, of which 120 credits are to be acquired from class room study and shall only be counted for SGPA and CGPA. Out of the 120 credits, 38 (22 for common (English) courses + 16 for common languages other than English) credits shall be from common

courses, 2 credits for project/corresponding paper and 3 credits for the open course. (In the case of LRP Programmes 14 credits for common courses (English), 8 credits for additional language courses and 16 credits for General courses). The maximum credits for a course shall not exceed 5. Dual core programmes are having separate credit distribution. Audit courses shall have 4 credits per course and a total of 16 credits in the entire programme. The maximum credit acquired under extra credit shall be 4. If more Extra credit activities are done by a student, that may be mentioned in the Grade card. The credits of audited courses or extra credits are not counted for SGPA or CGPA.

4.13. Attendance: A student shall be permitted to appear for the semester examination, only if he/she secures not less than 75% attendance in each semester. Attendance shall be maintained by the Department concerned. Condonation of shortage of attendance to a maximum of 10% in the case of single condonation and 20% in the case of double condonation in a semester shall be granted by University remitting the required fee. Benefits of attendance may be granted to students who attend the approved activities of the college/university with the prior concurrence of the Head of the institution. Participation in such activities may be treated as presence in lieu of their absence on production of participation/attendance certificate (within two weeks) in curricular/extracurricular activities (maximum 9 days in a semester). Students can avail of condonation of shortage of attendance in a maximum of four semesters during the entire programme (Either four single condonations or one double condonation and two single condonations during the entire programme) . If a student fails to get 65% attendance, he/she can move to the next semester only if he/she acquires 50% attendance. In that case, a **provisional registration** is needed. Such students can appear for supplementary examination for such semesters after the completion of the programme. Less than 50% attendance requires Readmission. Readmission is permitted only once during the entire programme.

4.14. Grace Marks: Grace marks may be awarded to a student for meritorious achievements in co-curricular activities (in Sports/Arts/NSS/NCC/Student Entrepreneurship) carried out besides the regular hours. Such a benefit is applicable and limited to a maximum of 8 courses in an academic year spreading over two semesters. In addition, maximum of 6 marks per semester can be awarded to the students of UG Programmes, for participating in the College Fitness Education Programme (COFE).

4.15. Project: Every student of a UG degree programme shall have to work on a project of 2 credits under the supervision of a faculty member or shall write a theory course based on Research Methodology as per the curriculum. College shall have the liberty to choose either of the above. One Project with 3 credits shall be done in any of the two core subjects in the case of Dual Core programmes.

But SDE/Private Registration students shall write the Research Methodology course instead of project. Board of Studies concerned shall prepare the syllabus for the same.

5. BOARD OF STUDIES AND COURSES

5.1. The UG Boards of Studies concerned shall design all the courses offered in the UG programmes. The Boards shall design and introduce new courses, modify or re-design existing courses and replace any existing courses with new/modified/re-designed courses to facilitate better exposure and training for the students.

5.2. The Syllabus of a course shall include the title of the course, the number of credits, maximum marks for external and internal evaluation, duration of examination hours, distribution of internal marks and reference materials. The Board of Studies concerned has the liberty to decide whether the questions can be answered in Malayalam or not. Maximum efforts shall be made to maintain a uniform pattern while designing the courses, project, viva, practical etc. in the scheme and syllabus of various programmes coming under same faculty.

5.3. The Syllabus for Common Courses, eventhough prepared by different Boards of Studies, may be put under a separate head as Syllabus for Common Courses.

5.4. Each course have an alpha numeric code, the number of credits and title of the course. The code gives information on the subject, the semester number and the serial number of the course. Each module/chapter may mention the number of questions to be asked in each section in the Question paper.

5.5. The syllabus of each course shall be prepared module wise. The course outcomes are to be clearly stated in the syllabus of all subjects including laboratory subjects, The number of instructional hours and reference materials are also to be mentioned against each module. Since a semester contains 16 instructional weeks, the same may be considered in the preparation of the syllabi.

5.6. The scheme of examination and model question papers are to be prepared by the Board of Studies. The number of questions from each module in each section may be given along with the syllabus.

5.7. A Question Bank system shall be introduced. Boards of Studies shall prepare a Question Bank, modulewise, at least 8 times to that required for a Question paper.

5.8. Boards of Studies should make the changes in the syllabi and text books in consultation with the teachers. Each Course should have a Preamble which clearly signifies the importance of that course. The Higher secondary syllabus also to be taken into account while preparing the UG syllabus.

5.9. Boards of Studies have to be constantly in touch with renowned Indian Universities and at least a few foreign universities. Subject experts have to be identified in all major fields of study and endeavour, and consulted frequently.

6. ADMISSION

6.1. The admission to all programmes will be as per Rules and Regulations of the University.

6.2. The eligibility criteria for admission shall be as announced by the University from time to time.

6.3. Separate rank lists shall be drawn up for reserved seats as per the existing rules.

6.4. The admitted candidates shall subsequently undergo the prescribed courses of study in a college affiliated to the University for six semesters within a period of not less than three years; clear all the examinations prescribed and fulfil all such conditions as prescribed by the University from time to time.

6.5. The college shall make available to all students admitted a **prospectus** listing all the courses offered in various departments during a particular semester. The information so provided shall contain title of the courses, the semester in which it is offered and credits for the courses. Detailed syllabi shall be made available in the University/college websites.

6.6. There shall be a uniform **calendar** prepared by the University for the registration, conduct/schedule of the courses, examinations and publication of results. The University shall ensure that the calendar is strictly followed.

Admission notification and the academic calendar for SDE/ Private Registration will be prepared and issued by SDE.

6.7. There shall be provision for **Inter Collegiate and Inter University Transfer** in third and fifth semester within a period of two weeks from the date of commencement of the semester. College transfer may be permitted in Second and Fourth semester also without change in complementary course within a period of two weeks from the date of commencement of the semester concerned.

6.8. **Complementary change** at the time of college transfer is permitted in the third semester if all conditions are fulfilled.

6.8.1. **Core/Complementary change under SDE/Private Registration:** Existing rule (as in CUCBCSS UG 2014) shall be followed in Core/Complementary Change.

6.9. CBCSS regular students can join distance education stream/Private Registration in any semester in the same programme or different one. If core and complementary courses are different, they have to undergo them in the new stream. The marks/grace obtained for common courses will be retained.

6.10. A student registered under distance education stream/Private Registration in the CBCSS pattern may be permitted to join the regular college (if there is a vacancy within the sanctioned strength) in the third and fifth semester with the same programme only. If there is a change in complementary courses, it can be done with following conditions: i) the external and internal marks/grade obtained in the previous semesters for the earlier complementary courses will be cancelled. ii) the students have to write the external examinations for the previous semester for the new complementary courses along with the subsequent batch. iii)

An undertaking to the effect that “the internal evaluation for the previous semesters of the new complementary courses will be conducted”, is to be obtained from the Principal of the college in which the student intends to join.

6.11. Provision for **credit transfer** is subject to common guidelines prepared by the faculty concerned.

6.12. There shall be provision for **Readmission** of students in CBCSS UG 2019.

6.12.1. The Principal can grant readmission to the student, subject to the conditions detailed below and inform the matter of readmission to the Controller of Examinations within one month of such readmission.

6.12.2. This readmission is not to be treated as college transfer.

6.12.3. There should be a gap of at least one semester for readmission.

6.12.4. The candidate seeking readmission to a particular semester should have registered for the previous semester examination.

6.12.5. Readmission shall be taken within two weeks from the date of commencement of the semester concerned.

6.12.6. Deleted.

6.12.7. If there is a change in complementary courses, it can be done with following conditions: i) the external and internal marks/grade obtained in the previous semesters for the earlier complementary courses will be cancelled. ii) the students have to write the external examinations for the previous semester for the new complementary courses along with the subsequent batch iii) An undertaking to the effect that “the internal evaluation for the previous semesters of the new complementary courses will be conducted”, is to be obtained from the Principal of the college in which the student intends to take readmission.

6.12.8. If change in scheme occurs while readmission, provision for credit transfer is subject to common guidelines prepared by Board of Studies/ Faculty concerned. For readmission to CBCSS UG 2019 involving scheme change, the Principal concerned shall report the matter of readmission to Controller of Examinations with the details of previous semesters and course undergone with credits within two weeks in order to fix the deficiency/excess papers.

7. REGISTRATION

7.1. Each student shall make an online registration for the courses he/she proposes to take, in consultation with the Faculty Adviser within two weeks from the commencement of each semester. The college shall send a list of students registered for each programme in each semester giving the details of courses registered, including repeat courses, to the University in the prescribed form within 45 days from the commencement of the semester.

It is mandatory that the students who got admission under CBCSS UG 2019 in SDE/Private shall register for the examinations of the concerned semesters in the same year itself.

7.2. A student shall be normally permitted to register for the examination if he/she has required minimum attendance. If the student has a shortage of attendance below 65% in a semester, the student shall be permitted to move to the next semester (if the attendance is more than 50% - Provisional registration) and can write the examination for the entire courses of the semester in which shortage of attendance occurs as supplementary examination only after the completion of the entire programme. In such cases, a request from the student may be forwarded through the Principal of the college to the Controller of Examinations within two weeks of the commencement of the semester. If the attendance is less than 50%, the student is ineligible to continue the programme and has to seek readmission. **There will not be any Repeat semester in CBCSSUG 2019.**

7.3. A student who registered for the course shall successfully complete the programme within 6 years from the year of first registration. If not, such candidate has to cancel the existing registration and join afresh as a new candidate.

7.4. For open courses there shall be a minimum of 10 and maximum of 75 students per batch. For other courses existing pattern will be followed.

7.5. Those students who have followed the UG Programmes in annual pattern or Choice based Credit & Semester System pattern can cancel their earlier registration and register afresh for CBCSSUG 2019 scheme in the same discipline or a different one.

7.6. The students who have attendance within the limit prescribed, but could not register for the examination have to apply for **Token registration**, within two weeks of the commencement of the next semester.

8. EXAMINATION

8.1. There shall be University examinations at the end of each semester.

8.2. Practical examinations shall be conducted by the University as prescribed by the Board of Studies.

8.3. External viva-voce, if any, shall be conducted along with the practical examination/project evaluation.

8.4. The model of question papers may be prepared by the concerned Board Of Studies. Each question should aim at – (1) assessment of the knowledge acquired (2) standard application of knowledge (3) application of knowledge in new situations.

8.5. Different types of questions shall possess different marks to quantify their range. A general scheme for the questionpaper is given in Annexure III.

8.6. Project evaluation shall be conducted at the end of sixth semester. 20% of marks are awarded through internal assessment.

8.7. Audit course: The students can attain only pass (Grade P) for these courses. At the end of each semester there shall be examination conducted by the college from a pool of questions set by the University. The students can also attain the credits through online courses like

SWAYAM, MOOC etc. The College shall send the list of passed students to the University at least before the commencement of fifth semester examination.

8.8. Improvement course: Improvement of a particular semester can be done only once. The student shall avail of the improvement chance in the succeeding year after the successful completion of the semester concerned. The students can improve a maximum of two courses in a particular semester (for SDE/Private registration students also). The internal marks already obtained will be carried forward to determine the new grade/mark in the improvement examination (for regular students). If the candidate fails to appear for the improvement examination after registration, or if there is no change in the results of the improved examination, the mark/grade obtained in the first appearance will be retained.

Improvement and supplementary examinations cannot be done simultaneously.

8.9. Moderation: Moderation is eligible as per the existing rules of the Academic Council.

9. EVALUATION AND GRADING

9.1. Mark system is followed instead of direct grading for each question. For each course in the semester letter grade and grade point are introduced in 10-point indirect grading system as per guidelines given in Annexure-1

9.2. Course Evaluation

The evaluation scheme for each course shall contain two parts

1) Internal assessment 2) External Evaluation

20% weight shall be given to the internal assessment. The remaining 80% weight shall be for the external evaluation.

9.2.1. Internal Assessment

20% of the total marks in each course are for internal examinations. The marks secured for internal assessment only need to be sent to University by the colleges concerned.

The internal assessment shall be based on a predetermined transparent system involving written tests, Class room participation based on attendance in respect of theory courses and lab involvement/records attendance in respect of Practical Courses.

Internal assessment of the project will be based on its content, method of presentation, final conclusion and orientation to research aptitude.

Components with percentage of marks of Internal Evaluation of Theory Courses are-Test paper 40%, Assignment 20%, Seminar 20% and Class room participation based on attendance 20%.

For practical courses - Record 60% and lab involvement 40% as far as internal is concerned.

(if a fraction appears in internal marks, nearest whole number is to be taken)

For the test paper marks, at least one test paper should be conducted. If more test papers are conducted, the mark of the best one should be taken.

To ensure transparency of the evaluation process, the internal assessment marks awarded to the students in each course in a semester shall be notified on the notice board at least one

week before the commencement of external examination. There shall not be any chance for improvement for internal marks. The course teacher(s) shall maintain the academic record of each student registered for the course, which shall be forwarded to the University by the college Principal after obtaining the signature of both course teacher and Head of the Department.

The Split up of of marks for Test paper and Class Room Paticipation (CRP) for internal evaluation are as follows.

Split up of marks for Test paper

Range of Marks in test paper	Out of 8 (Maximum internal marks is 20)	Out of 6 (Maximum internal marks is 15)
Less than 35%	1	1
35% - 45%	2	2
45% - 55%	3	3
55% - 65%	4	4
65% -85%	6	5
85% -100%	8	6

Split up of marks for Calss Room Participation

Range of CRP	Out of 4 (Maximum internal marks is 20)	Out of 3 (Maximum internal marks is 15)
50% ≤ CRP < 75%	1	1
75% ≤ CRP < 85%	2	2
85 % and above	4	3

9.2.2. Internal Assessment for SDE/Private Registration : Regarding internal component, the student will have to attend a fill in the blank type/multiple choice type examination of 20 marks along with the external examination in SDE mode. The attendance component of internal marks is not mandatory for such students.

9.2.3. External Evaluation

External evaluation carries 80% of marks. All question papers shall be set by the University. The external question papers may be of uniform pattern with 80/60 marks (The pattern is given in the Annexure III). The courses with 2/3 credits will have an external examinaion of 2 hours duration with 60 marks and courses with 4/5 credits will have an external examination of 2.5 hours duration with 80 marks.

The external examination in theory courses is to be conducted by the University with question papers set by external experts. The evaluation of the answer scripts shall be done by

examiners based on a well-defined scheme of valuation and answer keys shall be provided by the University. The external examination in practical courses shall be conducted by two examiners – one internal and an external, the latter appointed by the University. The project evaluation with viva can be conducted either internal or external which may be decided by the Board of Studies concerned. (Guidelines are given in the Annexure II).

After the external evaluation only marks are to be entered in the answer scripts. All other calculations including grading are done by the University.

9.2.4. Revaluation: In the new system of grading, revaluation is permissible. The prevailing rules of revaluation are applicable to CBCSSUG 2019.

Students can apply for photocopies of answer scripts of external examinations. Applications for photocopies/scrutiny/revaluation should be submitted within 10 days of publication of results. The fee for this shall be as decided by the University.

10. INDIRECT GRADING SYSTEM

10.1. Indirect grading System based on a 10-point scale is used to evaluate the performance of students.

10.2. Each course is evaluated by assigning marks with a letter grade (O, A+, A, B+, B, C, P, F, I or Ab) to that course by the method of indirect grading. (Annexure I).

10.3. An aggregate of P grade (after external and internal put together) is required in each course for a pass and also for awarding a degree (A minimum of 20% marks in external evaluation is needed for a pass in a course. But no separate pass minimum is needed for internal evaluation). No separate grade/mark for internal and external will be displayed in the grade card; only an aggregate grade will be displayed. Also the aggregate mark of internal and external are not displayed in the grade card.

10.4. A student who fails to secure a minimum grade for a pass in a course is permitted to write the examination along with the next batch.

10.5. After the successful completion of a semester, Semester Grade Point Average (SGPA) of a student in that semester is calculated using the formula given below. For the successful completion of a semester, a student should pass all courses. However, a student is permitted to move to the next semester irrespective of SGPA obtained.

SGPA of the student in that semester is calculated using the formula

$$\text{SGPA} = \frac{\text{Sum of the credit points of all courses in a semester}}{\text{Total credits in that semester}}$$

10.6. The Cumulative Grade Point Average (CGPA) of the student is calculated at the end of a programme. The CGPA of a student determines the overall academic level of the student in a programme and is the criterion for ranking the students. CGPA can be calculated by the following formula.

$$\text{CGPA} = \frac{\text{Total credit points obtained in six semesters}}{\text{Total credits acquired (120)}}$$

10.7. SGPA and CGPA shall be rounded off to three decimal places. CGPA determines the broad academic level of the student in a programme and is the index for ranking students (in terms of grade points). An overall letter grade (cumulative grade) for the entire programme shall be awarded to a student depending on her/his CGPA (Annexure-I)

11. GRADE CARD

11.1. The University shall issue to the students grade/marks card (by online) on completion of each semester, which shall contain the following information:

- Name of University
- Name of College
- Title of UG Programme
- Semester concerned
- Name and Register Number of student
- Code number, Title and Credits of each Course opted in the semester
- Letter grade in each course in the semester
- The total credits, total credit points and SGPA in the Semester (corrected to three decimal places)

11.2. The final Grade card issued at the end of the final semester shall contain the details of all courses taken during the entire programme including those taken over and above the prescribed minimum credits for obtaining the degree. The final grade card shall show CGPA (corrected to three decimal places), percentage of marks (corrected to two decimal places) and the overall letter grade of a student for the entire programme. The final grade card shall also include the CGPA and percentage of marks of common courses, core courses, complementary courses and open courses separately. This is to be done in a 10- point indirect scale. The final Grade card also contain the list of Audit courses passed and the details of Extra credits.

11.3. Evaluation of Audit courses: The examination shall be conducted by the college itself from the Question Bank prepared by the University. The Question paper shall be of 100 marks of 3 hour duration. For SDE/Private students it may be of MCQ/ fill in the blank type questions or Online question paper may be introduced.

12. CALICUT UNIVERSITY SOCIAL SERVICE PROGRAMME (CUSSP)

In this programme, a student has to complete 12 days of social service. This has to be completed in the first four semesters; 3 days in each semester. For the regular programme the

student has to work in a Panchayath or Local body or in a hospital/ poor home or old age home or in a Pain & paliative centre or any social work assigned by the College authorities. Students who engaged in College Union activities and participate in sports and cultural activities in Zonal level have to undergo only 6 days of CUSSP during the entire programme. The whole documents regarding the student should be kept in the college and the Principal should give a Certificate for the same. The list of students (successfully completed the programme) must be sent to the University before the commencement of the fifth semester examinations. A College level Co-ordinator and a Department level Co-ordinator shall be appointed for the smooth conduct of the programme.

12.1. CUSSP for SDE/Private students: For SDE/Private students, out of the 12 days, the student has to undergo 6 days in a Panchayath or Local body and the remaining 6 days in a Hospital/ Old age home or in a Pain and paliative centre.. The respective certificate should uploaded to the University (before the commencement of fifth semester examinations) in respective student portal and the University should provide an Online Certificate for the same.

13. AWARD OF DEGREE

The successful completion of all the courses (common, core, complementary and open courses) prescribed for the degree programme with 'P' grade shall be the minimum requirement for the award of degree.

13.1. Degree for Oriental Title courses: Those students who have passed Oriental Title courses earlier have to appear for the common courses. A 01 to A 06 in order to get POT degree. This can be done through SDE/Private Registration (SDE/Private registration along with the First semester students).

13.2. For obtaining Additional Degree: Undergraduate degree holders in any scheme/pattern, can register for additional degrees through SDE/Private Registration, provided, they satisfy the eligibility criteria of the degree they apply for. Additional degree candidates have to register in first semester itself through SDE/Private Registration and have to follow the stipulations fixed for the programmes in SDE/Private Registration. No courses shall be exempted to the additional degree candidates.

14. GRIEVANCE REDRESSAL COMMITTEE

14.1. Department level: The college shall form a Grievance Redressal Committee in each department comprising of course teacher, one senior teacher and elected representative of students (Association Secretary) as members and the Head of the Department as Chairman. This committee shall address all grievances relating to the internal assessment grades of the students.

14.2. College level: There shall be a college level grievance redressal committee comprising of student adviser, two senior teachers, two staff council members (one shall be elected

member) and elected representative of students (College Union Chairperson) as members and Principal as Chairman.

14.3. University level: The University shall form a Grievance Redressal Committee as per the existing norms.

15. A Steering Committee consisting of two syndicate members of whom one shall be a teacher, the Registrar of the University, Controller of Examinations, seven teachers from different disciplines (preferably one from each faculty), two Chairpersons of Board of Studies (one UG and 1 PG), and two Deans of Faculty shall be formed to resolve the issues, arising out of the implementation of CBCSSUG 2019. The Syndicate member who is also a teacher shall be the Convenor of the committee. The quorum of the committee shall be six and meeting of the committee shall be held at least thrice in an academic year. The resolutions of the committee will be implemented by the Vice-Chancellor in exigency and this may be ratified by the Academic Council.

16. TRANSITORY PROVISION

Notwithstanding anything contained in these Regulations, the Vice-Chancellor shall, for a period of three years from the date of coming into force of these Regulations, have the power to provide by order that these regulations shall be applied to any programme with such modifications as may be necessary.

17. REPEAL

The regulations now in force in so far as they are applicable to programmes offered by the University and to the extent they are inconsistent with these regulations are hereby repealed. In the case of any inconsistency between the existing Regulations and these Regulations relating the Choice-Based Credit Semester System in their application to any course offered in a College, the latter shall prevail.

Annexure-1

Method of Indirect Grading

Evaluation (both internal and external) is carried out using Mark system .The Grade on the basis of total internal and external marks will be indicated for each course, for each semester and for the entire programme.

Indirect Grading System in 10 -point scale is as below:

Ten Point Indirect Grading System

Percentage of Marks (Both Internal & External put together)	Grade	Interpretation	Grade point Average (G)	Range of grade points	Class
95 and above	O	Outstanding	10	9.5 -10	First Class with Distinction
85 to below 95	A+	Excellent	9	8.5 -9.49	
75 to below 85	A	Very good	8	7.5 -8.49	
65 to below 75	B+	Good	7	6.5 -7.49	First Class
55 to below 65	B	Satisfactory	6	5.5 -6.49	
45 to below 55	C	Average	5	4.5 -5.49	Second Class
35 to below 45	P	Pass	4	3.5 -4.49	Third Class
Below 35	F	Failure	0	0	Fail
Incomplete	I	Incomplete	0	0	Fail
Absent	Ab	Absent	0	0	Fail

Example – 1 SGPA Calculation

Semester I	Course Name	Grade Obtained	Grade point (G)	Credit (C)	Credit point (CXG)
XXXXXXX	XXXXXXX	A	8	4	32
XXXXXXX	XXXXXXXXXX	C	5	3	15
XXXXXXX	XXXXXXXXXX	A+	9	4	36
XXXXXXX	XXXXXXXXXX	B+	7	3	21
XXXXXXX	XXXXXXXXXX	P	4	3	12
XXXXXXX	XXXXXXXXXX	C	5	4	20

SGPA = $\frac{\text{Sum of the Credit points of all courses in a semester}}{\text{Total Credits in that semester}}$

$$\text{SGPA} = \frac{32+15+36+21+12+20}{21} = \frac{136}{21}$$

SGPA = 6.476

Percentage of marks of semester I = $(\text{SGPA}/10) \times 100 = 64.76\%$

Note: The SGPA is corrected to three decimal points and the percentage of marks shall be approximated to two decimal points.

Example: 2

Semester II	Course Name	Grade Obtained	Grade point (G)	Credit (C)	Credit point (CXG)
XXXXXXX	XXXXXXX	A	8	4	32
XXXXXXX	XXXXXXXXXX	C	5	3	15
XXXXXXX	XXXXXXXXXX	A+	9	4	36
XXXXXXX	XXXXXXXXXX	B+	7	3	21
XXXXXX*	XXXXXXXXXX	F	0	3	0
XXXXXXX	XXXXXXXXXX	C	5	4	20

*Failed course

Note: In the event a candidate failing to secure 'P' grade in any Course in a semester, consolidation of SGPA and CGPA will be made only after obtaining 'P' grade in the failed Course in the subsequent appearance.

CGPA Calculation

$$\text{CGPA} = \frac{\text{Total Credit points obtained in six semesters}}{\text{Total Credits acquired (120)}}$$

Example

$$\text{CGPA} = 136 + 145 + 161 + 148 + 131 + 141 / 120 = 862/120$$

$$\text{CGPA} = 7.183$$

$$\text{Total percentage of marks} = (\text{CGPA}/10) * 100$$

$$\text{Total \% of marks} = (7.183/10) * 100 = 71.83$$

$$\text{CGPA of Core Courses} = \frac{\text{Total Credit points obtained for Core Courses}}{\text{Total Credits acquired for Core Courses}}$$

Similarly CGPA of Complementary courses, Open courses, English Common courses and Additional Language Common courses may be calculated and the respective percentage may be calculated. All these must be recorded in the Final Grade Card.

ANNEXURE II

Guidelines for the Evaluation of Projects

1. PROJECT EVALUATION- Regular

1. Evaluation of the Project Report shall be done under Mark System.
2. The evaluation of the project will be done at two stages :
 - a) Internal Assessment (supervising teachers will assess the project and award internal Marks)
 - b) External evaluation (external examiner appointed by the University)
 - c) Grade for the project will be awarded to candidates, combining the internal and external marks.
3. The internal to external components is to be taken in the ratio 1:4. Assessment of
 - different components may be taken as below.

Internal (20% of total) Components	External (80% of Total) Percentage of internal marks	Components
Originality	20	Relevance of the Topic, Statement of Objectives
Methodology	20	Reference/ Bibliography, Presentation, quality of Analysis/ Use of Statistical Tools.
Scheme/ Organisation of Report	30	Findings and recommendations
Viva – Voce	30	Viva – Voce

4. External Examiners will be appointed by the University from the list of VI Semester Board of Examiners in consultation with the Chairperson of the Board.
5. The Chairman of the VI semester examination should form and coordinate the evaluation teams and their work.
6. Internal Assessment should be completed 2 weeks before the last working day of VI Semester.
7. Internal Assessment marks should be published in the Department.
8. In the case of Courses with practical examination, project evaluation shall be done along with practical examinations.

9. The Chairman Board of Examinations, may at his discretion, on urgent requirements, make certain exception in the guidelines for the smooth conduct of the evaluation of project.

2. PASS CONDITIONS

- Submission of the Project Report and presence of the student for viva are compulsory for internal evaluation. No marks shall be awarded to a candidate if she/ he fails to submit the Project Report for external evaluation.
- The student should get a minimum P Grade in aggregate of External and Internal.
- There shall be no improvement chance for the Marks obtained in the Project Report.
- * In the extent of student failing to obtain a minimum of Pass Grade, the project work may be re-done and a new Internal mark may be submitted by the Parent Department. External examination may be conducted along with the subsequent batch.

Annexure-III

Question paper type 1

Scheme of Examinations:

The external QP with 80 marks and Internal examination is of 20 marks. Duration of each external examination is 2.5 Hrs. The pattern of External Examination is as given below. The students can answer all the questions in Sections A&B. But there shall be Ceiling in each section.

Section A

Short answer type carries 2 marks each - 15 questions Ceiling - 25

Section B

Paragraph/ Problem type carries 5 marks each - 8 questions Ceiling - 35

Section C

Essay type carries 10 marks (2 out of 4) 2X10=20

Question paper type 2

Scheme of Examinations:

The external QP with 60 marks and Internal examination is of 15 marks. Duration of each external examination is 2 Hrs. The pattern of External Examination is as given below. The students can answer all the questions in Sections A & B. But there shall be Ceiling in each section.

Section A

Short answer type carries 2 marks each - 12 questions Ceiling - 20

Section B

Paragraph/ Problem type carries 5 marks each - 7 questions Ceiling - 30

Section C

Essay type carries 10 marks (1 out of 2) 1X10=10

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UNIVERSITY OF CALICUT

Abstract

General & Academic Branch -Faculty of Commerce and Management Studies-Master of Commerce Programme under CBCSS PG Regulations 2019 w.e.f 2020 Admission on wards for affiliated colleges and SDE -Incorporating Outcome Based Education - Implemented - Subject to ratification by Academic Council -Orders Issued.

G & A - IV - E

U.O.No. 5725/2021/Admn

Dated, Calicut University.P.O, 29.05.2021

- Read:-*1.U.O No.16567/2019/Admn Dated 22.11.2019, U.O No.16664/2019/Admn Dated 26.11.2019 and U.O.No. 8387/2019/Admn Dated 29.06.2019.
2.Item No.1 of the minutes of meeting of BoS in in Commerce (PG) held on 14.05.2021.
3.Email dated 19.05.2021 from the Chairman, BOS in Commerce (PG).
4.Order of Vice Chancellor of the file of even No. dated 27.05.2021.

ORDER

1. The scheme and syllabus of Master of Commerce Programme under CBCSS PG Regulations 2019 has been implemented w.e.f 2019 admission onwards for affiliated colleges and SDE , vide paper read (1) above.
2. The meeting of the Board of Studie in Commerce (PG), held on 14.05.2021, vide paper read (2) above, approved the Out Come Based Education (OBE) syllabus of master of Commerce (M.Com) Programme under CBCSS PG Regulations 2019, without changing the content w.e.f 2020 admission onwards.
3. The Dean, Faculty of Commerce and Management Studies and Chairman, BoS in Commerce (PG), vide paper read (3) above, has approved the above resolution of the Board of Studie in Commerce (PG), held on 14.05.2021 and forwarded the Out Come Based Education (OBE) syllabus of master of Commerce (M.Com) Programme.
4. Considering the urgency in implementation of the syllabus, sanction has been accorded by the Vice Chancellor on 27.05.2021 to implement Outcome Based Education in the existing syllabus of Master of Commerce Programme (CBCSS PG 2019) without changing the content, with effect from 2020 Admission onwards, subject to ratification by the Academic Council, vide paper read as (4) above.
5. The scheme and Syllabus effecting Outcome Based Education in the existing syllabus of Master of Commerce Programme (CBCSS PG 2019) for affiliated Colleges and SDE/Private Registration, without changing the content, with effect from 2020 Admission onwards, is therefore implemented, subject to ratification by the Academic Council.

Orders are issued accordingly. (syllabus appended)

Ajitha P.P

Joint Registrar

To

1.The Principals of Affiliated Colleges. 2 The.Director, SDE.

Copy to:PS to VC/PA to PVC/PA to Registrar/PA to CE/JCE I/JCE V/JCE VIII/EX & EG Sections/GA I F/CHMK Library/SF/DF/FC.

Forwarded / By Order

Section Officer



UNIVERSITY OF CALICUT
REGULATIONS FOR CHOICE BASED CREDIT SEMESTER SYSTEM (CBCSS)FOR
MASTER OF COMMERCE PROGRAMME FOR AFFILIATED COLLEGES AND FOR SDE /
PRIVATE REGISTRATION” IMPLEMENTED WITH EFFECT FROM 2019-20 ACADEMIC
YEAR ©

1.0 Title of the programme

This DEGREE shall be called **MASTER OF COMMERCE (M.Com.)**.

2.0. Eligibility for admission

Any candidate who has passed B. Com or BBA (earlier BBS) degree of University of Calicut or B. Com, BBA or BBS degree of any other University or institutes in any state recognised by UGC or AICTE and approved by University of Calicut with minimum of 45% marks or equivalent grade is eligible for admission. OBC and SC/ST students are eligible for mark/grade relaxation as per the University rules. In the case of B. Com (Honours) and B. Com (Professional) students, the minimum eligibility for admission is 50% for all categories of students.

2.1 Admission Procedure

Admission procedure stipulated by University from time to time shall be strictly followed.

3.0 Duration of the programme

The duration of the M. Com programme of study is two years divided into four semesters.

4.0 Medium of Instruction

The medium of instruction and examination shall be English.

5. Scheme of Instruction and Examination

5.1 Semester One

Course Code	Course Title	Interna 1 Credit	Externa 1 Credit	Total Credit	Teachin g Hours	Type
MCM1C01	Business Environment & Policy	0.8	3.2	4	5	Core
MCM1C02	Corporate Governance & Business Ethics	0.8	3.2	4	5	Core
MCM1C03	Quantitative Techniques for Business Decisions	0.8	3.2	4	5	Core
MCM1C04	Management Theory and Organizational Behaviour	0.8	3.2	4	5	Core
MCM1C05	Advanced Management Accounting	0.8	3.2	4	5	Core
	Total in Semester One	4.0	16.0	20	25	

Semester 5.1.1: Ability Enhancement Course (AEC)*

Course Code	Course Title	Internal Credit	External Credit	Total Credit	Type
MCM1A01	Internship cum Organisation Study	0.8	3.2	4	Audit
MCM1A02	Case Study Preparation	0.8	3.2	4	Audit
MCM1A03	Communication/Mental Ability/Numerical Skill	0.8	3.2	4	Audit
MCM1A04	NET Coaching	0.8	3.2	4	Audit
MCM1A05	Designing with Block Chain Workshop/ Future Casting Workshop	0.8	3.2	4	Audit
MCM1A06	Model Project Preparation	0.8	3.2	4	Audit
MCM1A07	Soft Skill Development	0.8	3.2	4	Audit
MCM1A08	Presentation/Publication of research papers/Book Review	0.8	3.2	4	Audit

*The institution can choose any one of the above courses. This course will not be counted for calculation of SGPA/CGPA

	Grand Total in Semester One	4.8	19.2	24	
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5.2.Semester Two

Course Code	Course Title	Internal Credit	External Credit	Total Credit	Teaching Hours	Type
MCM2C06	Advanced Corporate Accounting	3.2	0.8	4	5	Core
MCM2C07	Advanced Strategic Management	3.2	0.8	4	5	Core
MCM2C08	Strategic Cost Accounting	3.2	0.8	4	5	Core
MCM2C09	International Business	3.2	0.8	4	5	Core
MCM2C10	Management Science	3.2	0.8	4	5	Core
	Total in Semester Two	16.0	4.0	20	25	

Semester 5.2.1: Professional Competency Course (PCC)*

Course Code	Course Title	Internal Credit	External Credit	Total Credit	Type
MCM2A01	Business Analytics using R	3.2	0.8	4	Audit
MCM2A02	Big Data Analysis	3.2	0.8	4	Audit
MCM2A03	Live Project with Statistical Packages	3.2	0.8	4	Audit
MCM2A04	Spread Sheet Application	3.2	0.8	4	Audit
MCM2A05	Accounting Package Skill	3.2	0.8	4	Audit
MCM2A06	Computer Programming Skill	3.2	0.8	4	Audit
MCM2A07	Innovation/Entrepreneurship/Idea Pitching	3.2	0.8	4	Audit

*The institution can choose any one of the above courses. This course will not be counted for calculation of SGPA/CGPA

	Grand Total in Semester Two	4.8	19.2	24	
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5.3. Semester Three

Course Code	Course Title	Internal Credit	External Credit	Total Credit	Teaching Hours	Type
MCM3C11	Financial Management	0.8	3.2	4	5	Core
MCM3C12	Income Tax Law, Practice and Tax Planning I	0.8	3.2	4	5	Core
MCM3C13	Research Methodology	0.8	3.2	4	5	Core
MCM3E01	Elective I	0.8	3.2	4	5	Elective
MCM3E02	Elective II	0.8	3.2	4	5	Elective
	Total in Semester Three	4.0	16.0	20	25	

5.4.Semester Four

Course Code	Course Title	Internal Credit	External Credit	Total Credit	Teaching Hours	Type
MCM4C14	Financial Derivatives & Risk Management	0.8	3.2	4	5	Core
MCM4C15	Income Tax Law, Practice and Tax Planning II	0.8	3.2	4	5	Core
MCM4E03	Elective III	0.8	3.2	4	5	Elective
MCM4E04	Elective IV	0.8	3.2	4	5	Elective
MCM4PV01	Project Work & Comprehensive Viva Voce	0.8	3.2	4	5	Dissertation & Viva
	Total in Semester Four	4.0	16.0	20	25	
	Grand Total (5.1+5.1.1+5.2+5.2.1+5.3+5.4)	17.6	70.4	88		

5.5. Specialisation

Electives

5.5.1. Finance

MCM3EF01	Investment Management	3.2	0.8	4
MCM3EF02	Financial Markets & Institutions	3.2	0.8	4
MCM4EF03	International Finance	3.2	0.8	4
MCM4EF04	Advanced Strategic Financial Management	3.2	0.8	4

5.5.2.Foreign Trade

MCM3EFT01	Foreign Trade Management	3.2	0.8	4
MCM3EFT02	Foreign Trade Policy and Procedures	3.2	0.8	4
MCM4EFT03	International Finance	3.2	0.8	4
MCM4EFT04	International Marketing and Logistic Management	3.2	0.8	4

5.5.3.Human Resource Management

MCM3EH01	Industrial Relations Management	3.2	0.8	4
MCM3EH02	Management Training and Development	3.2	0.8	4
MCM4EH03	Performance Management	3.2	0.8	4
MCM4EH04	Compensation Management	3.2	0.8	4

5.5.4.Marketing

MCM3EM01	Advertising and Sales Management	3.2	0.8	4
MCM3EM02	Consumer Behaviour	3.2	0.8	4
MCM4EM03	Supply Chain and Logistics Management	3.2	0.8	4
MCM4EM04	Service Marketing	3.2	0.8	4

All the above courses shall be handled by Commerce Faculty.

5.6. Each student shall undergo any one course in respective semesters mentioned in clause 5.1 with course code MCM1A01 to MCM1A08 during the first semester and any one course mentioned in clause 5.2 with course code MCM2A01 to MCM2A07 during the second semester as Audit Courses (Ability Enhancement Course & Professional Competency Course) with 4 credits each. The credits will not be counted for evaluating the overall SGPA & CGPA. The colleges shall conduct examination for these courses and have to intimate /upload the results of the same to the University on the stipulated date during the III Semester. Students have to obtain only minimum pass requirements in the Audit Courses. In the case students doing M. Com under SDE, the SDE shall take necessary arrangements for the conduct of examinations and evaluation of Audit Courses.

5.7 There shall be an Industrial Visit/Study Tour/Field visit in the third semester and report shall be submitted to the Head of the department within two weeks of the visit (Applicable only to regular students of affiliated colleges)

6.0 Attendance

A student shall attend at least 75 percent of the total number of classes held during each semester. The students having less than prescribed percentage of attendance shall not be allowed to appear for the University examination. For SDE / Private Registration students, minimum 75% of attendance is required for the courses having mandatory Contact classes. Condonation of shortage of attendance for a maximum of 9 days (10% of the working days in a semester) in the case of single condonation and 18 days (20% of the working days in a semester) in the case of double condonation in a semester subject to a maximum of two times (for single condonation only) during the whole period of programme is granted. In the case of double condonation, only one condonation shall be allowed during the entire programme.

7.0 Duration of the semester

Each semester shall have a duration of 18 weeks. Teaching and learning shall have a minimum duration of 16 weeks and for the conduct of semester end examination shall be completed within a period of 2 weeks. Instruction and University examinations in each course in a semester shall be completed within 90 days in a semester.

8.0. Internal Assessment

All courses shall have internal assessment.

8.1. Internal Assessment Marks

As per common regulations for CBCSS for PG

8.2. Internal assessment components

As per common regulation for CBCSS for PG

8.3. Transparency about internal Assessment

Each faculty shall maintain record of performance and attendance of each student in his or her class course-wise

Each faculty shall submit internal assessment marks of the students to the Head of the department or institution on conclusion of lecture class in each semester.

Such internal assessment mark lists shall show all the components separately and the total of internal assessment marks awarded to each student.

Format for Internal Assessment Mark list

Reg No:	Name	Test:1	Test:2	Test:3	Sum of Best 2 Tests 40%	Seminar Paper 10%	Presentation of Seminar 10%	Attendance 20%	Assignment 20%	Total 100%

The Department or Centre or College shall publish the list of internal assessment marks of all the students shall be published in the notice board within 5 days before the commencement of external examination.

The faculty shall make available details of the internal assessment marks, with explanations wherever required, to the Head of the Department or Institution in case of grievance regarding internal marks.

The Department or Centre or College shall strictly follow the grievance handling mechanism prevails in the University from time to time.

9.0 External Examination: As per common regulations for CBCSS for PG

10.0 Project Work

10.1. During the fourth semesters each student shall do a project work under the guidance of a faculty member preferably in their area of specialisation.

The project should be done individually on a topic based on a business organisation or a social or economic problem relating to the discipline to be decided by the student under supervising teacher.

The candidate shall prepare at least two copies of the report: one copy for submission to the Department and one copy for the student which he/she has to bring with him/her at the time of viva voce. More copies may be prepared if the organization or the guide or both ask for one copy each.

The report shall be printed (or neatly typed) and bound (preferably spiral bound) with not less than 50 A4 size, 1.5 spaced, pages, Times New Roman Font, Font Size 13 pt. References format shall be insisted on API style.

The project report should be submitted to the Head, Department of Commerce of the College where he/she is doing M. Com at least 10 days before the last working day of the fourth semester duly certified by the guide.

10.2. Structure of the report

Title page
 Certificate from the organization (if the project work is done in an organisation).
 Plagiarism certificate shall be mandatory for project submission for all category of students
 Certificate from the supervising teacher. Declaration of student.
 Acknowledgements
 Contents
 Chapter I: Introduction (Significance of the study, Research problem, objectives of the study, Research methodology etc.)
 Chapter II: Review of literature
 Chapter III: Organization Profile/Conceptual Frame work
 Chapter IV: Data Analysis and Interpretation
 Chapter V: Summary, Findings and Recommendations.

Appendix: Questionnaire, specimen copies of forms, other exhibits etc.

Bibliography: Books, journal articles etc. used for the project work.

10.3. Project work shall have the following stages

Selection of an organisation
 Problem identification
 Project draft proposal presentation and discussion
 Finalisation of the proposal
 Data collection and analysis of data
 Report writing
 Final Project Presentation
 Report submission.

Evaluation of project report: As per common regulations for CBCSS for PG.

11.0. Viva Voce

At the end of fourth semester, each candidate shall attend a comprehensive viva voce along with the project evaluation. The viva voce shall include all the courses of the M.Com programme, including project report.

11.1. The viva board shall have two external examiners and one internal member. The external examiners shall be appointed by the University. The internal examiner shall be the Head, Department of Commerce of the College or a faculty member nominated by him or her from the Department of Commerce.

11.2. Guideline for evaluation of Project Evaluation and conduct of Viva-voce (for the students of affiliated colleges)

(a)	The Head of the Department shall arrange the internal evaluation of the Project work and upload the mark to the University website.
(b)	The internal credit of 20% shall be distributed based on the following criteria: (1) Report Preparation as per the clause 11.3 (d) (2) Comprehensive Viva-Voce as per clause 11.3(d)
(c)	The external marks shall be awarded by conducting Project Evaluation and Comprehensive Via-Voce by the Board consisting of External and Internal examiners constituted for this purpose.

11.3. The External evaluation by the final semester Board of Examiners appointed by the University for 3.2 credits for the project report and for comprehensive viva voce in the final semester. While evaluating the project report and comprehensive viva voce weightage may be distributed in the following order.

SI No	Criteria of Evaluation	Weightage	Weightage
		External 3.2Credit	Internal 0.8 Credit
1	Problem Formulation and Methodology Adopted- Relevance of the topic, statement of the problem, Setting SMART objectives, Research Design, Sampling Design, Tool Designing, Pilot Study Identification of Variables, Setting Hypothesis and Designing a Conceptual Map	08	02
2	Analysis of Data and Findings: - Quality of analysis, Synchronisation with SMART objectives and Hypothesis Testing	08	02
3	Report Writings	08	02
4	Comprehensive Viva Voce	16	04
	Total	40	10

11.4. Guidelines for evaluation of Project Evaluation and conduct of Viva-voce (for the students of School of Distance Education)

(a) The student shall arrange a supervising teacher for their Project work themselves while the students are in the third semester itself and intimate the same to the SDE Centre Co-ordinator (in the Proforma provided). All regular/retired Commerce Teachers of Govt./ Aided Colleges are competent to be a supervising teacher.

(b) The Project should be submitted to the Centre Co-ordinator within the time fixed by the Co-ordinator.

(c) Internal marks of 0.8 credit for the Project work shall be awarded by the Internal evaluation of the Project work to be arranged by the SDE Centre Co-ordinator on the basis of criteria of evaluation mentioned in table of clause 11.3 (d).

(d) The external credit of 3.2 for the project work and comprehensive viva voce shall be awarded by the board of examiners consisting of at least two examiners nominated by the Centre Co-ordinator with the approval of the SDE Director. All regular/retired teachers of Govt./Aided colleges under the University are competent to be the external examiners for the evaluation of the project. The external marks shall be distributed on the basis of the following criteria:

12.0. Minimum Credit for the Project Report and Viva Voce

The student should get a minimum of P grade for the project report for a pass

If the student fails to get P grade for any project report, he or she shall resubmit the project report after modifying it on the basis of the recommendation of the examiners. This can be done immediately after publication of results.

The student should get P grade for a pass in viva-voce.

13.0. Choosing Optional for specialization

Each candidate shall choose an area as given in clause 5.1.1 to 5.1.4 above and the choice shall be final. This choice should be clearly mentioned in the application filled up for registration of the first semester examinations.

13.1. Changing option after completing the course

Option change will be allowed after the completion of the M. Com programme, that is after applying for or appearing for all the four semester examinations, only on cancellation of the previous choice of the optional area.

In that case, marks of the previous option will not be retained. Original mark lists of the previous optional papers shall be submitted to the Controller of Examinations along with the application for registration for examinations under the new option.

After applying for or appearing for such examinations under the new option, new mark lists shall be issued with the marks scored in the examinations in the courses under the new option or if the student fails to appear for examinations under the new option, his or her absence will be mentioned in the mark list.

13.2. Option change after applying for degree certificate

Option change shall not be allowed once a student applies for provisional or original degree certificate.

In case a college wants to change its optional area, it shall complete the process of approval of option change before admission to M. Com of that academic year starts. That is, option available in a college shall not be changed after admission to M. Com of the year is completed.

Notwithstanding anything stated in these regulations, a student is always free to cancel his or her registration for M. Com with a given option and register for it with a different option. That is, if a student has already registered for M. Com with Financial Management, he or she can cancel that registration and register afresh for M. Com with any other option along with M. Com regular candidates of that year. On cancellation, he or she has to write all the four semester examinations afresh.

14. 0. Ranks

Ranks shall be awarded in each area of specialization. That is, there shall be one set of ranks for Finance area, another set for Marketing area and a third set of ranks for HRM area etc.

15. 0. Applicability of this regulations to SDE students:

This common regulation for M. Com Programme in respect of attendance, duration of semester, Internal assessment components, Study Tour/Industrial visit etc. are not applicable to SDE students. Instead the rules and regulations issued by the university from time to time in this regard or in any other manner will be applicable to them.

16. 0. Application of the common regulation for CBCSS PG

In all other matters where this regulation is silent the provisions of the common regulation for PG Program under CSS of the University modified from time to time will be applicable.

Note: This set of regulations supersedes all the earlier M. Com regulations and this set of scheme, syllabi and regulations shall be in force from the 2019-20 M. Com admissions in colleges. University reserves the right to amend these schemes, regulations and syllabi from time to time without prior notice to any.



AQAR 2020-21

ENGLISH

Criterion I - Curricular Aspects

SUB CRITERION -1.2.1 - Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented



UNIVERSITY OF CALICUT

Abstract

General and Academic - Faculty of Language and Literature - Syllabus of BA English Language and Literature (including Dual Core) under CBCSS UG Regulations 2019 with effect from 2019 Admission onwards -Implemented-Orders Issued.

G & A - IV - B

U.O.No. 8653/2019/Admn

Dated, Calicut University.P.O, 02.07.2019

*Read:-*1.U.O.No. 4368/2019/Admn Dated, 23.03.2019.

2.Minutes of the Meeting of the Board of Studies in English (UG) held on 27/03/2019 (Item No.3).

3.Minutes of the meeting of the Faculty of Language and Literature on 17/06/2019 (Item No. V a).

ORDER

The Regulations for Choice Based Credit and Semester System for Under Graduate (UG) Curriculum-2019 (CBCSS UG Regulations 2019) for all UG Programmes under CBCSS-Regular and SDE/Private Registration w.e.f. 2019 admission has been implemented vide paper read first above .

The meeting of the Board of Studies in English UG held on 27/03/2019 vide item No. 3 has approved the Syllabus of BA English Language and Literature (including Dual core) in tune with new CBCSS UG Regulation implemented with effect from 2019 Admission onwards, vide paper read second above.

The Faculty of Language and Literature at its meeting held on 17/06/2019 has approved item No.3 of the minutes of the meeting of the Board of Studies in English UG held on 27/03/2019 vide paper read third above.

Under these circumstances, considering the urgency , the Vice Chancellor has accorded sanction to implement the Scheme and Syllabus of BA English Language and Literature (including Dual core) in accordance with the new CBCSS UG Regulations 2019, in the University with effect from 2019 Admission onwards, subject to ratification by the Academic Council.

Sanction is therefore accorded for implementing the Scheme and Syllabus of BA English Language and Literature (including Dual core) in accordance with CBCSS UG Regulations 2019, in the University with effect from 2019 Admission onwards .

Orders are issued accordingly. (Syllabus appended)

Biju George K

Assistant Registrar

To

1.The Principals of all Affiliated Colleges 2. Director, SDE
Copy to : PS to VC/PA to PVC/ PA to Registrar/PA to CE/ JCE I/JCE II/JCE VIII/DoA/EX and
EG Sections/GA I F /CHMK Library/Information Centres/SF/DF/FC

Forwarded / By Order

Section Officer



Revised Syllabus (w.e.f 2019 admission) of
B.A. Programme in
**ENGLISH LANGUAGE AND LITERATURE (CBCSS-
UG)**
CHOICE BASED CREDIT SEMESTER SYSTEM (CBCSS)

Contents

Topics	Pages
Courses at a Glance	
Core Courses	10-56
Open Courses	57-62
Complementary Courses	63-69
Audit Courses	7
Extra Credit Activities	8
Assessment Framework	
Internal Assessment	8
End-semester Test	9

COURSES AND CREDITS

Serial No.	COURSE	CREDITS
1	COMMON COURSES	22 +16 = 38
2	CORE COURSES INCLUDING PROJECT & ELECTIVES	63
3	OPEN COURSES	3
4	COMPLEMENTARY COURSES	16
5	AUDIT COURSES	16
6	EXTRA CREDIT ACTIVITIES	4
	TOTAL	140

CORE COURSES

Seri al No.	COURSE CODE	SEMES TER	TITLE OF THE COURSE	HRS/WK	CREDITS	PAGE NO.
1	ENG1B01	1	INTRODUCING LITERATURE	6	5	10
2	ENG2B02	2	APPRECIATING POETRY	6	5	13
3	ENG3B03	3	APPRECIATING PROSE	4	4	15
4	ENG3B04	3	ENGLISH GRAMMAR AND USAGE	5	4	17
5	ENG4B05	4	APPRECIATING FICTION	5	4	19
6	ENG4B06	4	LITERARY CRITICISM	4	4	21
7	ENG5B07	5	APPRECIATING DRAMA AND THEATRE	5	4	23
8	ENG5B08	5	LITERARY THEORY	5	4	25
9	ENG5B09	5	LANGUAGE AND LINGUISTICS	5	4	27
10	ENG5B10	5	INDIAN WRITING IN ENGLISH	5	4	30
11	ENG6B11	6	VOICES OF WOMEN	5	4	32
12	ENG6B12	6	CLASSICS OF WORLD LITERATURE	5	4	34
13	ENG6B13	6	FILM STUDIES	5	4	36
14	ENG6B14	6	NEW LITERATURES IN ENGLISH	5	4	38
15	ENG6B15/16/17/1 8/19/20	6	ELECTIVES	3	3	40/42/44/46/ 48/50
16	ENG6B21/ ENG6B22	5 and 6	PROJECT/ RESEARCH METHODOLOGY	2 per semester	2	52/55
17	SCHEME OF EXAMINATION					72
			TOTAL	63 CREDITS		

Study Tour

Students may be taken on a study tour to any of the premier institutions of language, culture, art, film or media within the country during the Vth or VIth semesters

ELECTIVES

Serial No.	COURSE CODE	SEMESTER	TITLE OF THE COURSE	HRS/WK	PAGE NO.
1	ENG6B15	6	LITERATURE OF THE MARGINALIZED	3	40
2	ENG6B16	6	DIGITAL LITERATURE AND ENGLISH	3	42
3	ENG6B17	6	WRITING FOR THE MEDIA	3	44
4	ENG6B18	6	TRANSLATION STUDIES	3	46
5	ENG6B19	6	ENGLISH LANGUAGE EDUCATION	3	48
6	ENG6B20	6	SHAKESPEARE	3	50

OPEN COURSES

(FOR STUDENTS OF OTHER DISCIPLINES)

Open Course offers chances for any undergraduate students in an institution to take a course of their own choice, from other disciplines in the same institution.

Serial No.	COURSE CODE	SEMESTER	TITLE OF THE COURSE	HRS/WK	CREDITS	PAGE NO.
1	ENG5D01	5	ENGLISH FOR COMPETITIVE EXAMINATIONS	3	3	57
2	ENG5D02	5	CREATIVE WRITING IN ENGLISH	3	3	59
3	ENG5D03	5	APPRECIATING LITERATURE	3	3	61

DUAL CORE PROGRAMMES

Serial No.	COURSE CODE	SEMESTER	TITLE OF THE COURSE	HRS/WK	CREDITS	PAGE NO.

1	ENG1B01	1	INTRODUCING LITERATURE	6	5	10
2	ENG2B02	2	APPRECIATING POETRY	6	5	13
3	ENG3B03	3	APPRECIATING PROSE	4	4	15
4	ENG3B04	3	ENGLISH GRAMMAR & USAGE	5	4	17
5	ENG4B06	4	LITERARY CRITICISM	4	4	21
6	ENG5B23	5	APPRECIATING DRAMA	5	5	70
7	ENG5B09	5	LANGUAGE & LINGUISTICS	5	4	27
9	ENG6B11	6	VOICES OF WOMEN	5	4	32
10	ENG6B(15/16/17/18/19)	6	ELECTIVES	3	3	40/42/44/46/48/50
11	PROJECT/ RESEARCH METHODOLOGY ENG6B21 ENG6B22	5 and 6		2 per semester	3	52/55
TOTAL			41 CREDITS			

***Project can be chosen either from Core English or from other core**

Complementary Courses

Complementary Courses provide learners with openings to disciplines ancillary to core Courses. They give opportunities to explore areas contiguous to English Language and Literature and also of reciprocal interest. There are **Type I** and **Type II** Complementary Courses. There shall be only one Complementary Course in a semester for B A Programmes. Type I Complementary Courses are taught in Semester I and IV. Type II Complementary Courses are taught in Semester II and III. The college can decide on which complementary course to be taken as Type I or Type II.

COMPLEMENTARY COURSES OFFERED BY BOARD OF STUDIES IN ENGLISH (UG) FOR OTHER UG PROGRAMMES

Serial No.	COURSE CODE	SEMESTER	TITLE OF THE COURSE	HRS/WK	CREDITS	PAGE NO.
1	ENG1(2)C01	½	ENGLISH FOR COMMUNICATION COURSE I	6	4	63

			ASPECTS OF ORAL AND INTERPERSONAL COMMUNICATION			
2	ENG4(3)C01	$\frac{3}{4}$	ENGLISH FOR COMMUNICATION COURSE II ASPECTS OF READING AND WRITING	6	4	65
				TOTAL 8 CREDITS		

COMBINATION OF COMPLEMENTARY COURSES OFFERED FOR B.A. ENGLISH PROGRAMME

Table 1	Table 2
Social and Cultural History of Britain	Modern World History/Journalism/Political Science/Sociology/ Indian Constitution and Politics/ Modern Indian History
Journalism	Political Science/ Electronic Media/ Modern Indian History/ Indian Constitution and Politics
History of English Literature	Social and Cultural History of Britain/ Modern World History/Journalism/Political Science/Sociology/ Indian Constitution and Politics/ Modern Indian History/ Electronic Media
Emergence and Establishment of Islam	Movements and Revivalism in Islam

*Colleges can opt one Complementary Course from Table 1 and a corresponding Complementary Course from Table 2. It is not permitted to make options across the table given above

COMPLEMENTARY COURSES OFFERED BY BOARD OF STUDIES IN ENGLISH (UG) [TO BE OPTED BY STUDENTS OF B.A. ENGLISH PROGRAMME]

Serial No.	COURSE CODE	SEMESTER	TITLE OF THE COURSE	HRS/WK	CREDITS	PAGE NO.
1	ENG1(2)C02	$\frac{1}{2}$	HISTORY OF ENGLISH LITERATURE – I	6	4	66
2	ENG4(3)C02	$\frac{3}{4}$	HISTORY OF ENGLISH LITERATURE - II	6	4	68

			TOTAL 8 CREDITS
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ABILITY ENHANCEMENT COURSES/ AUDIT COURSES

These are courses which are mandatory for a programme but not counted for the calculation of SGPA or CGPA. There shall be one Audit course each in the first four semesters. These courses are not meant for classroom study. The students can attain only pass (Grade P) for these courses. At the end of each semester there shall be examination conducted by the college from a pool of questions (Question Bank) set by the University. The students can also attain these credits through online courses like SWAYAM, MOOC etc (optional). The list of passed students must be sent to the University from the colleges at least before the fifth semester examination. The list of courses in each semester with credits are given below.

COURSES	SEMESTER	CREDIT
Environment Studies	1	4
Disaster Management	2	4
*Human Rights/Intellectual Property Rights/ Consumer Protection	3	4
*Gender Studies/Gerontology	4	4

*** Colleges can opt any one of the courses**

*** Refer to CBCSSUG 2019 Regulations**

Extra Credit Activities

Extra credits are mandatory for the programme. Extra credits will be awarded to students who participate in activities like NCC, NSS and Swatch Bharath. Those students who could not join in any of the above activities have to undergo Calicut University Social Service Programme (CUSSP). Extra credits are not counted for SGPA or CGPA.

Internal Assessment Framework

Item	Marks /20	Marks/15
Assignments	4	3
Test Paper(s)/ Viva voce	8	6
Seminar/Presentation	4	3
Classroom participation based on attendance	4	3
Total	20	15

*Assignments and Seminars may be given from the FURTHER READING section attached to the syllabus of each course.

Split up of marks for test papers/viva voce

Range of Marks in test paper	Out of 8 (Maximum internal marks is 20)	Out of 6 (Maximum internal marks is 15)
Less than 35%	1	1
35%- 45%	2	2
45% - 55%	3	3
55% - 65%	4	4
65% -85%	6	5
85% -100%	8	6

Split up of marks for Classroom Participation

Range of Marks in test paper	Range of CRP Out of 4 (Maximum internal marks is 20)	Out of 3 (Maximum internal marks is 15)
50% ≤CRP <75%	1	1
75% ≤CRP <85%	2	2
85 % and above	4	3

External Assessment Framework

End Semester Test Design of Courses with 80 Marks

SI No Question type	No. of Questions	Marks/ Question	Total Marks
Short answers (2/3 sentences)	15	2	Ceiling 25
Paragraph/problem type	8	5	Ceiling 35
Essay Type	2 out of 4	10	20
Total			80
Time			2.5 hrs

End Semester Test Design of Courses with 60 Marks

*For courses with three credits or lesser, the external exam is for 2 hrs with 75 marks(60 external and 15 internal

Question type	No. of Questions	Marks/ Question	Total Marks
Short answers (2-4 sentences)	12	2	Ceiling 20
Paragraph/problem/application type	7	5	Ceiling 30
Essay Type	1 out of 2	10	10
Total		60	
Time		2 hrs	

CORE COURSES

INTRODUCING LITERATURE

COURSE CODE	ENG1B01
TITLE OF THE COURSE	INTRODUCING LITERATURE
SEMESTER IN WHICH THE COURSE IS TO BE TAUGHT	1
NO. OF CREDITS	5
NO. OF CONTACT HOURS	108 (6 hrs per week)

AIM OF THE COURSE: To introduce students to literary texts and their unique conventions and contours – the linguistic, the social, the cultural and the political. The course is more of a search for the ‘why’ and ‘how’ rather than the ‘what’ of literature. Creative texts are analysed organically in participatory classrooms with teachers and students dialoguing with the texts.

OBJECTIVES OF THE COURSE:

- To introduce students to the language of literature, i.e., the meaning-making devices, verb phrases, collocations, linkers, sense groups and their functions in the literary text
- To train the students to identify the linguistic structures of poetic texts: symbols, metaphors, and other tropes and equip them in poetic conventions
- To recognize diverse points of view within a single text and to understand the rationale of polyphony
- To prepare students in reading literary/cultural texts closely, beyond the literal.
- To enable students to recognize the dominant voice/s within the text and its agendas
- To encourage questioning the text in order to perceive marginalized voices - the voices of the child, Dalit, transgender and female



UNIVERSITY OF CALICUT

Abstract

General and Academic - Faculty of Language and Literature - Syllabus of MA English Language and Literature Programme under CCSS PG Regulations 2019 in the Teaching Department of the University with effect from 2019 Admission onwards - Implemented- Orders Issued.

G & A - IV - B

U.O.No. 9162/2019/Admn

Dated, Calicut University.P.O, 11.07.2019

- Read:-*1. U.O.No. 4500/2019/Admn Dated, 26.03.2019
2. Minutes of the Meeting of the Board of Studies in English PG held on 29/05/2019.
3. Minutes of the meeting of the Faculty of Language and Literature on 17/06/2019 (item no VIII b)

ORDER

The Regulations under Choice-based Credit Semester System for Post Graduate Programmes (CCSS-PG -2019) of all Teaching Departments / Schools of the University ,w.e.f 2019 admissions has been implemented vide paper read first above.

The meeting of Board of Studies in English PG held on 29/05/2019 has approved the Syllabus of MA English Language and Literature for Teaching Departments / Schools of the University in tune with new CCSS PG Regulations with effect from 2019 Admission onwards, vide paper read second above.The Faculty of Language and Literature at its meeting held on 17/06/2019 has approved the minutes of the meeting of the Board of Studies in English PG held on 29/05/2019, vide paper read third above.

Under these circumstances , considering the urgency, the Vice Chancellor has accorded sanction to implement the Scheme and Syllabus of MA English Language and Literature Programme in accordance with new CCSS PG Regulations 2019, in the University with effect from 2019 Admission onwards, subject to ratification by the Academic Council.

The Scheme and Syllabus of MA English Language and Literature Programme in accordance with CCSS PG Regulations 2019 in the Teaching Department of the University is therefore implemented in the University with effect from 2019 Admission onwards.

Orders are issued accordingly. (Syllabus appended)

Biju George K

Assistant Registrar

To

The HoD, Department of English

Copy to: PS to VC/PA to PVC/ PA to Registrar/PA to CE/JCE I/JCE V DoA//EX and EG Sections/GA I F/CHMK Library/Information Centres/SF/DF/FC

Forwarded / By Order

Section Officer

UNIVERSITY OF CALICUT

Syllabus of MA English Language and Literature based on CCSS PG 2019 REGULATIONS

CHOICE- BASED CREDIT SEMESTER SYSTEM PG -2019
(CCSS PG -2019)



SCHEME & SYLLABUS
(2019 Admission onwards)

Name of the Programme : M.A. English Language and Literature.

Duration : Four semesters.

Types of courses offered : Core , Elective & Audit courses.

Audit courses :

Two Audit courses with 2 credits each, have to be done one each , in the first and second semesters.

This is a mandatory requirement , but the credits will not be counted for evaluating the overall SGPA & CGPA. Student has to obtain minimum pass requirement in these courses.

Eligibility criteria for Admission :

BA English Language and Literature, BA English and History /BA Functional English atleast 45% marks or BA/Bsc(excluding alternative pattern) degree with atleast 45% marks in part I English of this University or equivalent Degree. For candidates under Grading system overall CGPA at least equivalent to 50 %.

STRUCTURE OF THE PROGRAMME

Programme Duration	4 Semesters
Accumulated Minimum Credits required for successful completion of program	76
Minimum credits required from Core courses	52
Minimum credits required from Elective courses	16
Minimum credits required from dissertation	8
Minimum and maximum credits to be registered in a semester	16-24
Minimum attendance required	75%

MA English Language & Literature Programme (CCSS)

Syllabus (2019 admission onwards)

Course List

Core Courses

I Semester

ENG 1 C01	British Literature:14 th Century to18 th Century	4 Credits
ENG 1 C02	Indian Writing in English	4 Credits
ENG 1 C03	History of English Language	4 Credits
ENG 1 C04	Literary Criticism and Theory – Part I	4 Credits
ENG 1 C05	Postcolonial Writings	4 Credits

II Semester

ENG 2 C06	Perspectives on Shakespeare	4 Credits
ENG 2 C07	American Literature –I	4 Credits
ENG 2 C08	Literary Criticism and Theory -2	4 Credits

III Semester

ENG 3 C09	Introduction to Linguistics	4 Credits
ENG 3 C10	American Literature –II	4 Credits
ENG 3 C11	British Literature: 19 th Century	4 Credits

IV Semester

ENG 4 C12	20 th Century British Literature: Pre-1940	4 Credits
ENG 4 C13	20 th Century British Literature: Post-1940	4 Credits
ENG 4 P01	Dissertation / Project	8 Credits

Elective Courses

II Semester

ENG 2 E01	World Drama	4 Credits
ENG 2 E02	Indian Writing in English Translation	4 Credits
ENG 2 E03	Canadian Literature	4 Credits
ENG 2 E04	Literature of the Marginalized	4 Credits
ENG 2 E05	Short stories and Literary Movements	4 Credits
ENG 2 E06	English Studies in India	2 Credits

III Semester

ENG 3 E07	Translation Theory & Practice	4 Credits
ENG 3 E08	20 th Century Arabic Literature in English Translation	4 Credits
ENG 3 E09	Introduction to Cultural Studies	4 Credits
ENG 3 E10	Women's Writing	4 Credits
ENG 3 E11	Post 1980 Indian Writings in English	4 Credits
ENG 3 E12	Translation for the Media	2 Credits
ENG 3 E13	Introduction to Film Studies	2 Credits

IV Semester

ENG 4 E14	Malayalam Literature in English Translation	4 Credits
ENG 4 E15	Postcolonial Theory	4 Credits
ENG 4 E16	Ecology and Literature	4 Credits
ENG 4 E17	Teaching of English	4 Credits
ENG 4 E18	Advanced Writing skills	2 Credits

Audited courses(Compulsory)

I Semester

ENG 1 A01 Writing Skills	2 credits
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II Semester

ENG 2 A02 Listening and Speaking Skills in English	2 credits
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(Total Credits required for successful completion of course: 76)