

**KADI SARVA VISHWAVIDYALYA****B.SC CHEMISTRY / PHYSICS / MATHEMATICS / MICROBIOLOGY SEMESTER - 1 SCHEME**

Subject Code	Course	Group	Instructions Hrs / week	Examination			Credit
				Internal	University Exam	Total	
CCH-101	Fundamentals of Chemistry - I	All	4	30	70	100	4
CPH-101	Fundamentals of Physics – I	CPM	4	30	70	100	4
CMAT-101	Mathematics – I	CPM-A	6	45	105	150	6
CBI-101	Fundamentals of Botany – I	Ch-Micro	4	30	70	100	4
CMB-101	Fundamentals of Microbiology - I	Micro	4	30	70	100	4
PBI-101	Botany Practical – I	Ch-Micro	4	0	50	50	2
PCH-101	Chemistry Practical - I	All	4	0	50	50	2
PPH-101	Physics Practical - I	CPM	4	0	50	50	2
PMB-101	Microbiology Practical - I	Micro	4	0	50	50	2
FCG-101	( University Elective ) Basic English – I	All	2	15	35	50	2
EGC-101	Generic Elective ( Institute elective) Communication Skills – I	All	2	15	35	50	2
SE-101	Discipline Specific Elective ( Subject Specific elective) Environment Science	All	2	15	35	50	2
<b>For B.Sc Chemistry (A Group) / Physics / Mathematics - Total</b>			28	150	450	600	24
<b>For B.Sc Chemistry (B Group) - Total</b>			30	135	465	600	24
<b>For B.Sc Microbiology - Total</b>			30	135	465	600	24

Alias	Group
All -	B.Sc Chemistry / Pysics / Mathematics & Microbiology
CPM	For B.Sc Chemistry (A&B) / Physics / Mathematics
CPM-A	For B.Sc Chemistry (A Group) / Physics / Mathematics
Ch-Micro	For B.Sc Chmistry (B Group) & B.Sc Microbiology
Ch-Micro	Only for B.Sc Microbiology



**KADI SARVA VISHWAVIDYALYA**

**B.SC CHEMISTRY / PHYSICS / MATHEMATICS / MICROBIOLOGY SEMESTER - 2 SCHEME**

Subject Code	Course	Group	Instructions Hrs / week	Examination			Credit
				Internal	University Exam	Total	
CCH-201	Fundamentals of Chemistry – II	All	4	30	70	100	4
CPH-201	Fundamentals of Physics – II	CPM	4	30	70	100	4
CMAT-201	Mathematics – II	CPM-A	6	45	105	150	6
CMB-201	Microbial Physiology	Ch-Micro	4	30	70	100	4
CBI-201	Fundamental of Botany – II	Micro	4	30	70	100	4
PCH-201	Chemistry Practical - II	Ch-Micro	4	0	50	50	2
PPH-201	Physics Practical - II	All	4	0	50	50	2
PMB-201	Microbiology Practical - II	CPM	4	0	50	50	2
PBI-201	Botany Practical - II	Micro	4	0	50	50	2
FCG-201	( University Elective ) Basic English – II	All	2	15	35	50	2
EGC-201	Generic Elective ( Institute elective) Communication Skills – II	All	2	15	35	50	2
SE-201	Discipline Specific Elective ( Subject Specific elective) Disaster Management	All	2	15	35	50	2
<b>For B.Sc Chemistry (A Group) / Physics / Mathematics - Total</b>			28	150	450	600	24
<b>For B.Sc Chemistry (B Group) - Total</b>			30	135	465	600	24
<b>For B.Sc Microbiology - Total</b>			30	135	465	600	24

Alias	Group
All -	B.Sc Chemistry / Pysics / Mathematics & Microbiology
CPM	For B.Sc Chemistry (A&B) / Physics / Mathematics
CPM-A	For B.Sc Chemistry (A Group) / Physics / Mathematics
Ch-Micro	For B.Sc Chmistry (B Group) & B.Sc Microbiology
Ch-Micro	Only for B.Sc Microbiology

# **KADI SARVA VISHWAVIDYALAYA, GANDHINAGAR**



**Rules and Regulations (All B.Sc Course)**

**W.E.F. June 2017**

## **RULES AND REGULATIONS (For All B.Sc Course)**

### **R1: CCH: “Eligibility Criteria (EC)” for Admission**

A Candidate for admission to the Bachelor of Science (Chemistry) must have a 10+2 Science with A (Mathematics) or B (Biology) group, Bachelor of Science (Microbiology) must have a 10+2 Science with B (Biology) group, Bachelor of Science (Physics) must have a 10+2 Science with A (Mathematics) group, Bachelor of Science (Mathematics) must have a 10+2 Science with A (Mathematics) group. Provisional admission shall be provided subject to the clearance of examinations and eligibility.

### **R2: CCH: Admission Procedure**

Candidates are selected on the basis of Merit list.

### **R3: CCH: Examination, Assessment, Passing, Gradation, and Award of Degree**

The University has adopted Grade System as desired by U.G.C. w. e. f. 2009-2011 Session. Each academic year is divided into two Semesters and the Course will be completed in 3 years comprising of 6 semesters. The students are continuously evaluated through Mid Term assessments, Assignments, Seminars, End Term examinations, Group discussions, Article writing, Quiz competitions and Poster presentations. The minimum passing marks for each paper (Theory as well as practical) is 40%.

### **R4: CCH: MID TERM ADMISSIONS:**

No admissions are permitted to candidates desirous of Mid Term transfers from other Universities, seeking admissions to 2<sup>nd</sup> to 4<sup>th</sup> Semesters.

### **R5: CCH: REGISTRATION:**

If students those want to register themselves either in the semester-III or in the semester-V seeking degree shall have to register with the University by submission of a Migration Certificate from the University from where the Eligibility Examination has been cleared.

### **R6: CCH: SEMESTER EXAMINATIONS:**

1. Candidates desirous of appearing at any Semester Examination shall have to submit applications in the prescribed form, through the designated authority on or before the prescribed date.
2. No candidate will be admitted to any Semester examination unless the Designated Authority i.e. the Head of the Department or Principal of the College certifies that:
  - (1) The candidate attended the course of study to the satisfaction of the designated authority.

(2) The candidate maintained a good conduct and character during the studies.

(3) The candidate maintained Minimum 80% attendance in each semester

### **R7: CCH: EVALUATIONS:**

1. Each theory paper is evaluated for a maximum of 100 marks out of which, 30 marks shall be for Mid Term Exams. An end semester examination shall be of 3 hours duration carrying 70 marks to be held at the end of each semester.

### **Mid Term Result (30) = Score in midterm theory exam (40)/2 + assignment, seminar and attendance (10)**

1. In Semesters I& II a practical examination will be conducted, for a maximum of 50 marks.
  2. In Semesters III & IV a practical examination will be conducted, for a maximum of 100 marks.
  3. In Semesters V & VI a practical examination will be conducted, for a maximum of 200 marks.
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1. The Mid Term paper shall comprise of question 1 with multiple choice questions or very short answer questions, each question carrying 1 mark and all of them should be answered (10 X 1=10 marks) plus question 2 with 7 short answer questions out of which 5 need to be answered, each question carrying 3 marks. The question 3 will have 5 descriptive questions out of which 3 should be answered, the question carrying 5 marks.
  2. The End Term paper for semester-I & II carrying 70 marks. Total 5 Questions Each Question carry 14 marks. First 4 question from each unit of the syllabus. While last question no. 5 will be 14 multiple choice questions or very short answer questions, each question carrying 1 mark and all of them should be answered (14 X 1=14 marks).
  3. The End Term paper for semester-III to V carrying 70 marks. Total 4 Questions Each Question carry 20 marks. First 3 question from each unit of the syllabus. While last question no. 4 will be 10 multiple choice questions or very short answer questions, each question carrying 1 mark and all of them should be answered (10 X 1=10 marks).
  4. The marks obtained by the students in all the theory papers in the Mid Term must be submitted to university before commencement of end term theory examination. Marks in all the theory papers and in practicals in End Term will be sent to “The Controller of Examinations, Kadi Sarva Vishwavidyalaya, Gandhinagar”, within a fortnight from the close of the Semester.

5. Students shall have to appear in all the exams. Absence shall mean 0 Marks. An examination in which the candidate was absent/ failed, he/ she should re-appear. No candidate is allowed to re-appear for the Semester examinations already cleared.
6. The results of the examinations will be declared usually within 30 working days after the final examination. For awarding the degree at the end of the course all the Mid Term and Final exams Cumulative Performance Index (CPI) are taken in to consideration.

#### **R8: CCH: RULES FOR GRADING**

1. Theory Subjects and Practical Subjects are allotted credits as per the hours allocated to them per week. (i. e. 1 hr = 1 Credit = 25 Marks).
- 2. To pass a subject in any Semester a candidate must obtain a minimum of 40% of marks under each head of the subject and minimum of 40% in the individual subject head.**
3. If a candidate fails in any heads of a subject, he has to reappear for that particular paper and pass. (That is, for example if candidate fails in midterm exam of a subject, he has to reappear for midterm of that subject.)
4. The performance of each candidate in all the subjects will be evaluated on 7- point scale in term of grades as follow:

Grading Scheme		%age according to Grade	Grade Points	Qualitative Meaning of Grade
1	A +	90-100	10.0	Outstanding
2	A	80-89	9.0	Excellent
3	A-	70-79	8.0	Very Good
4	B +	60 - 69	7.0	Good
5	B	50-59	6.0	Average
6	B-	40-49	5.0	Fair
7	F	Less Than 40	0	Fail
8	I	Incomplete		

**R9: CCH: PERFORMANCE INDEX:**

The performance of a student in a semester is expressed in terms of the **Semester Performance Index (SPI)**.

**A. SEMESTER PERFORMANCE INDEX (SPI)**

The Semester Performance Index (SPI) is the weighted average of Course Grade Points obtained by the student in the semester. The Weights assigned to Course Grade Points are the Credits carried by the respective courses.

$$\text{SPI} = \frac{g_1 c_1 + g_2 c_2 + \dots}{c_1 + c_2 + \dots}$$

Where,  $g_1, g_2, \dots$  are the Grade points obtained by the student in the Semester, for Courses carrying Credits  $c_1, c_2, \dots$  respectively.

The cumulative performance of a student at the end of the Semester / Course is expressed in terms of the **Cumulative Performance Index (CPI)**.

**B. CUMULATIVE PERFORMANCE INDEX (CPI)**

This index is defined as the weighted average of Course Grade Points obtained for all the weights for Theory Papers (Both Mid Term & End Term) and Practicals attempted since his admission to the program, where the weights are defined in the same way as in **Semester Performance Index (SPI)**.

If a failed student repeats a course, only the Grade Points obtained in the latest attempt shall be counted in the **Cumulative Performance Index**. Whenever the candidate clears the subject in the next semester examination, the total credits for that subject will be added to CPI.

For any Semester, the maximum marks for the Mid Term and End Term assessments are shown in the teaching and examination scheme. For the purpose of Mid Term assessment, tests, quizzes, assignments or any other suitable methods of assessment may be used by the department.

**R10: CCH: SEMESTER PASSING SCHEME:**

- a. For each semester examination, a candidate will be considered as pass if he/she has secured “B-“ or above grade in all the subject (s) and overall grade point 5.00 or above.
- b. For each semester examination, a candidate will be considered as fail if he/she has secured “F” grade in any or all the subject (s).
- c. If the candidate does not fulfill the subject requirements including requisite attendance percentage, he/she will be given I grade and the candidate will have to complete the course requirements before the commencement of the next End Semester examination. If the candidate does not clear I grade in any subject before the commencement of the next End Semester examination, he/she will be considered fail - F grade.
- d. Candidate has to clear his / her ‘F’ grade or ‘I’ grade, if any, by the next End Semester examination.

**R11: CCH: SEMESTER PROMOTION SCHEME:**

A candidate will be promoted to the subsequent Semester according to the following scheme:

- a. A candidate would be granted admission to the Second Semester if and only if he/she has been granted Term for First Semester and has applied for the university examination.
- b. A candidate would be granted admission to the Third Semester if and only if he/she has been granted Term for First & Second Semesters and has applied for the university examination.
- c. A candidate would be granted admission to the Fourth Semester if and only if he/she has cleared all the subjects of First Semester. He /She will be permitted to pursue his/her study of Fourth Semester, provided his/her term for II & III Semesters is granted and has applied for the university examination.



**Promotion Criteria for B. Sc. (All Course)**

<b>Semester</b>	<b>Condition(s) For Promotion</b>
<b>II</b>	<b>Grant of Term for Semester – I</b>

<b>III</b>	<b>Grant of Term for Semester I and Semester II</b>
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<b>IV</b>	<b>Clearing of Semesters I completely and Grant of Term for Semester II &amp; Semester III</b>
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<b>V</b>	<b>Clearing of Semesters II completely and Grant of Term for Semester III &amp; Semester V</b>
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<b>VI</b>	<b>Clearing of Semesters III completely and Grant of Term for Semester IV &amp; Semester V</b>
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**R12: CCH: AWARD OF GRADING / DIVISION:**

No class/ division will be awarded to the students in the first 3 semesters. Divisions shall be awarded only at the end of Final Examinations on successful completion of all the Semesters. For awarding the degree at the end of the course, Cumulative Performance Index (CPI) of all the Mid Term and Final exams shall be taken in to consideration as per the following pattern of **Cumulative Performance Index (CPI)**:

<b>S.N.</b>	<b>CPI</b>	<b>Division</b>
1	7.50 to 10.00	I Division with Distinction
2	6.50 to 7.49	I Division
3	6.00 to 6.49	II Division
4	5.00 to 5.99	Pass Division

**R13: CCH: CRITERIA FOR AWARDING THE MARKS STATEMENT:**

Following criteria would be followed for awarding the mark statement of any Semester:

The Grade (Mark) sheet will contain separate grades for each of compulsory papers (subjects), Practical work, Project Work and overall grade for all the subjects combined. SPI and CPI will be shown in each semester's Grade (mark) sheet for each end-semester examination. In the Final Semester, it will also contain percentage and the class obtained.

#### **R14: CCH : EXAMPLES OF GRADE POINT CALCULATION**

Subject wise Grades and grade points will be calculated based on the defined Grading Scheme. For example

##### **FOR SEMESTER-I (Biology Group)**

<b>SUBJECTS</b>	<b>TOTAL MARKS (INT + EXT)</b>	<b>MARKS SECURED (INT + EXT)</b>	<b>%AGE</b>	<b>GRADE</b>	<b>GRADE POINTS</b>	<b>SUBJECT WISE CREDITS</b>	<b>CREDITS X GRADE POINTS (Total Credits)</b>
<b>CCH-101</b>	<b>100</b>	<b>75</b>	<b>75.00</b>	<b>A-</b>	<b>8</b>	<b>4</b>	<b>32</b>
<b>CPH-101</b>	<b>100</b>	<b>64</b>	<b>64.00</b>	<b>B+</b>	<b>7</b>	<b>4</b>	<b>28</b>
<b>CBI-101</b>	<b>100</b>	<b>50</b>	<b>50.00</b>	<b>B</b>	<b>6</b>	<b>4</b>	<b>24</b>
<b>FCG-101</b>	<b>50</b>	<b>35</b>	<b>70.00</b>	<b>A-</b>	<b>8</b>	<b>2</b>	<b>16</b>
<b>EGC-101</b>	<b>50</b>	<b>40</b>	<b>80.00</b>	<b>A</b>	<b>9</b>	<b>2</b>	<b>18</b>
<b>ECH-101(A)</b>	<b>50</b>	<b>20</b>	<b>40.00</b>	<b>B-</b>	<b>5</b>	<b>2</b>	<b>10</b>
<b>PCH-101</b>	<b>50</b>	<b>40</b>	<b>80.00</b>	<b>A</b>	<b>9</b>	<b>2</b>	<b>18</b>
<b>PPH-101</b>	<b>50</b>	<b>45</b>	<b>90.00</b>	<b>A+</b>	<b>10</b>	<b>2</b>	<b>20</b>
<b>PBI-101</b>	<b>50</b>	<b>40</b>	<b>80.00</b>	<b>A</b>	<b>9</b>	<b>2</b>	<b>18</b>
<b>TOTAL</b>						<b>24</b>	<b>184</b>

$$\text{SPI} : 184/ 24= 7.67$$

$$\text{CPI} = 7.67$$

**FOR SEMESTER-I (Maths Group)**

<b>SUBJECTS</b>	<b>TOTAL MARKS (INT + EXT)</b>	<b>MARKS SECURED (INT + EXT)</b>	<b>%AGE</b>	<b>GRADE</b>	<b>GRADE POINTS</b>	<b>SUBJECT WISE CREDITS</b>	<b>CREDITS  X GRADE POINTS  (Total Credits)</b>
<b>CCH-101</b>	<b>100</b>	<b>75</b>	<b>75.00</b>	<b>A-</b>	<b>8</b>	<b>4</b>	<b>32</b>
<b>CPH-101</b>	<b>100</b>	<b>64</b>	<b>64.00</b>	<b>B+</b>	<b>7</b>	<b>4</b>	<b>28</b>
<b>CMAT-101</b>	<b>150</b>	<b>75</b>	<b>50.00</b>	<b>B</b>	<b>6</b>	<b>6</b>	<b>36</b>
<b>FCG-101</b>	<b>50</b>	<b>35</b>	<b>70.00</b>	<b>A-</b>	<b>8</b>	<b>2</b>	<b>16</b>
<b>EGC-101</b>	<b>50</b>	<b>40</b>	<b>80.00</b>	<b>A</b>	<b>9</b>	<b>2</b>	<b>18</b>
<b>ECH-101(A)</b>	<b>50</b>	<b>20</b>	<b>40.00</b>	<b>B-</b>	<b>5</b>	<b>2</b>	<b>10</b>
<b>PCH-101</b>	<b>50</b>	<b>40</b>	<b>80.00</b>	<b>A</b>	<b>9</b>	<b>2</b>	<b>18</b>
<b>PPH-101</b>	<b>50</b>	<b>45</b>	<b>90.00</b>	<b>A+</b>	<b>10</b>	<b>2</b>	<b>20</b>
<b>TOTAL</b>						<b>24</b>	<b>178</b>

**SPI : 178/ 24= 7.41**

**CPI = 7.41**



# KADI SARVA VISHWAVIDYALAYA

## Semester – 1

### CBI 101- Fundamental of Botany – I (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the cell, types of cell, type of organelles. It also provides information about cryptogamic plants (Algae and Fungi). This course will also provides brief account of anatomical structure of plants and environmental factors which affects plant life.

#### **LEARNING OUTCOMES:**

- Knowledge regarding Type of cells, Type of organelles, Cell structure and function
- To understand Life cycles of cryptogamic plants i.e. Algae and Fungi
- To study the internal structure if plant body.
- To understand environmental factors affecting plant life.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 30 marks and End Term Examination conducted by University examination for 70 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
CBI- 101	Fundamental of Botany - I	4	4	3	30	70	100

#### **COURSE CONTENT**

<p><b>Unit-1 : Cell Biology</b></p> <p>The Cell theory, types of cells on the basis of Nucleus (Akaryota, Prokaryota &amp; Eukaryota) Size, Shape &amp; Number of Eukaryotic cells Comparison of ultra-structure of typical Prokaryotic &amp; Eukaryotic cell-Plant cell and Animal cell Structure &amp; function of Plasmodesmata Genomic organization of prokaryotic and Eukaryotic cells. Nucleus: history, distribution, parts, ultra-structure &amp; function Chromosome: shape depends upon the position of centromere, ultra-structure and functions</p>	<p><b>Number of lectures: 12</b> <b>Weightage: 25%</b></p>
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# KADI SARVA VISHWAVIDYALAYA

**Number of lectures: 12**

**Weightage: 25%**

## **Unit-2 : Biology of Cryptogams (Algae & Fungi)**

General characters of Algae

Economic importance of Algae (as food, fodder and fertilizer) Life history of *Spirogyra* with reference to

Systematic position with reasons (according to Smith)

Habit and Habitat, Vegetative structure and

Reproduction General characters of Fungi

Economic importance of Fungi (as food and medicine) Life history of *Mucor* with reference

to

Systematic position with reasons (according to Ainsworth)

Habit and Habitat, Vegetative structure and Reproduction

**Number of lectures: 12**

**Weightage: 25%**

## **Unit-III : Plant Anatomy**

General characteristics and functions of various kinds of plant tissues:

Meristematic, Simple tissues : Definition, (parenchyma, collenchyma and sclerenchyma fibres) and Complex tissues: Xylem, (thickenings in vessels / tracheids ) Phloem: sieve tube

Definition of Epidermal, Ground and Vascular tissue system Epidermal tissue system:

Uniseriate and Multiseriate epidermis

Types of Stomata (Dicot-Hibiscus & Monocot-Maize)

Types of Trichomes (Unicellular-stellate; Multicellular-unbranched & branched;

Glandular) Motor cells in Maize leaf

Cystolith in Banyan leaf

Sphaeroraphides in *Nerium* leaf

Velamen tissue in aerial root of Orchid

Structure and function of Periderm and Lenticel (*Tinospora*)



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**Number of lectures: 12**

**Weightage: 25%**

## **Unit-IV : Environmental Biology**

Definition, scope and Significance of Ecology for human

Climatic factors: **Light:** Introduction, Light relation in plant. **Temperature:** Introduction, variation in temperature and its effect on distribution of plants

Biotic factors: Positive Interrelationship

Symbiosis -Mutualism (Lichens, Symbiotic N<sub>2</sub> fixation, Mycorrhizae) Commensalism - Epiphytes: Orchid

Negative Interrelationship

Exploitation-Parasitism(*Cuscuta, Loranthus*)

Predation(*Nepenthus, Utricularia*)

Ecosystem Ecology: Definition, Kinds, Structure of

ecosystem Ecological Pyramids: Pyramids of Number,

Biomass and Energy

## **REFERENCES:**

1. College Botany Vol-1 Authors- Das, Dutta and Ganguli
2. College Botany Vol-1 Authors- Ganguli and Kar
3. Botany for degree students Algae Author- B.R.Vashishta
4. Botany for degree students Fungi Author- B.R.Vashishta
5. Ecology and Environment Author- P.D.Sharma
6. Cell Biology Author- C.B.Powar
7. Plant Anatomy Author- B.P.Pandey



# KADI SARVA VISHWAVIDYALAYA

## SEMESTER II

### CBI 201- Fundamental of Botany – II (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the genetics, Mendel's laws and gene interactions. It also provides information about cryptogamic plants (bryophytes and pteridophytes). This course will also provides brief account of external structures of plants i.e. morphology of leaf, arrangement of leaf, types of leaf and different structures related to leaf. It also gives information about those plants which are used by human for economic purpose.

#### **LEARNING OUTCOMES:**

- Knowledge regarding genetics, Mendel's laws and gene interactions
- To understand Life cycles of cryptogamic plants i.e. bryophytes and pteridophytes
- To study the external structure of plant body i.e. (morphology of leaf)
- To understand plants in human welfare.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 30 marks and End Term Examination conducted by University examination for 70 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
CBI-201	Fundamental Botany - II	4	4	3	30	70	100

#### **COURSE CONTENT**

<b>Unit-I : Genetics</b> Genetics: Introduction to genetics, Mendel's work and its results Mendel's Experiments: Monohybridisation and its experiment, <ul style="list-style-type: none"><li>• Monohybrid ratio (3:1, 1:2:1)</li><li>• Law of Dominance and Law of Segregation</li></ul> Dihybridisation and its experiment, <ul style="list-style-type: none"><li>▪ Dihybrid ratio (9:3:3:1)</li></ul>	<b>Number of lectures: 12</b> <b>Weightage: 25%</b>
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# KADI SARVA VISHWAVIDYALAYA

- Law of independent Assortment

Back cross and Test cross

Gene Interactions:

(A) Incomplete Dominance and Co- dominance

(B) Epistasis:

- Dominance Epistasis ratio (12:3:1),
- Recessive Epistasis ratio (9:3:4),
- Double recessive Epistasis ratio (9:7)
- Double dominance Epistasis ratio (15:1)

**Number of lectures: 12**

**Weightage: 25%**

## **Unit-II : Biology of Cryptogams (Bryophytes & Pteridophytes)**

Silent futures of Bryophytes

Life history of *Marchantia* with reference to:

Systematic position (Rothmaler and Proskaur) with reasons, Habit and Habitat, External and Internal structure of vegetative and reproductive organs, Fertilization, External and Internal structure of mature Sporophyte, Germination of Spores

Silent futures of Pteridophytes

Life history of *Nephrolepis* with reference to:

Systematic position (Smith) with reasons, Habit and Habitat, External structure of vegetative organs, External and Internal structure of fertile (reproductive) leaflet, Structure of mature Gametophyte along with sex organs and Fertilization.

**Number of lectures: 12**

**Weightage: 25%**

## **Unit-III : Angiosperm Morphology (External)**

**Leaf:**

- Phyllotaxy,
- Stipules: Types and Modifications,
- Venation,
- Incision,
- Simple and Compound leaves





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**Number of lectures: 12**

**Weightage: 25%**

## **Unit-IV : Plants and Human welfare**

Classification of Economic important plants (on the basis of uses)

To study the following Economic important plant specimens with reference to its Botanical name,

local name, family, useful part(s), Botanical characters, important chemical constituents and uses:

- Cereals: Wheat and Maize;
- Pulses: Pea and Cajan pea;
- Nuts: Cashewnut and Almond;
- Vegetables: Carrot and Potato;
- Fruits: Banana and Mango;
- Spices: Ginger and Clove;
- Beverages: Tea and Coffee;
- Sugar-yielding Plants: Sugar cane & Sugar beet.

## **REFERENCES:**

1. College Botany Vol-1 Authors- Das, Dutta and Ganguli
2. College Botany Vol-1I Authors- Ganguli and Kar
3. Botany for degree students Bryophyte Author- P.C.Vashishta
4. Botany for degree students Pteridophytes Author- P.C.Vashishta
5. Economic Botany Auther-B.P.Pandey
6. Taxonomy of Angiosperm Auther- B.P.Pandey
7. Genetics Author- P.K.Gupta



# KADI SARVA VISHWAVIDYALAYA

## Semester – I

### CCH-101 FUNDAMENTALS OF CHEMISTRY-1 (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the Chemical world, its origin and structure to help the potential application of the unexplored and unidentified chemicals in the industry.

#### LEARNING OUTCOMES:

- Understand the concept of origin of chemistry.
- Develop an understanding of the chemical systems around us.
- Gain knowledge about the structure, function and applications of various chemicals.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 30 marks and End Term Examination conducted by University examination for 70 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
CCH- 101	Fundamentals of Chemistry-I	4	4	3	30	70	100

#### COURSE CONTENT

<b>Number of lectures: 12</b>	<b>Weightage: 25%</b>
<b>Unit 1:</b> <b>(a) Chemical Bonding</b> <ul style="list-style-type: none"><li>• Valence bond theory, its application and limitation of VBT</li><li>• Directional characteristics of covalent bond</li><li>• Types of hybridization and shape of simple inorganic molecules (BeCl<sub>2</sub>, BCl<sub>3</sub>, CH<sub>4</sub>, PCl<sub>5</sub>, SF<sub>6</sub>)</li><li>• V.S.E.P.R. theory for NH<sub>3</sub>, H<sub>2</sub>O, BF<sub>4</sub></li><li>• M.O. Theory-Energy level diagram for homo nucleus diatomic molecules (N<sub>2</sub> and O<sub>2</sub>) and hetero diatomic molecule (CO and NO)</li></ul>	
<b>(b) F-Block Elements</b> <ul style="list-style-type: none"><li>• Lanthanide electronic configuration, Oxidation states</li><li>• Lanthanide contraction and its effect</li><li>• Separation method</li><li>(1) Solvent extraction methods</li><li>(2) Ion Exchange Method</li></ul>	
<b>Number of lectures: 12</b>	<b>Weightage: 25%</b>



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## Unit 2

### (a) Structure And Properties

- Factors affecting to the properties of organic molecule
- Intramolecular forces (dipol-dipol interaction, vanderwaals forces)
- Electromeric effect
- Inductive effect
- Resonance effect(draw resonating structures of Nitro benzene, Chlorobenzen, Phenoxide ion, Anillinium ion, Acetate ion)
- Hyper conjugation ( o,p-directing effect of Alkyl group, Stability of Carbonium ion and Free radicals )

### (b) Reaction Mechanism

- Fission of Co-Valent bond (With atleast one example of each intermediates )
- Types of reagents.
- Types of organic reaction with mechanism.
- Substitution reactions (Nucleophilic&Electrophilic)
- Addition reactions (Nucleophilic&Electrophilic)
- Elimination reactions (E<sub>1</sub> & E<sub>2</sub>)

**Number of lectures: 12**

**Weightage: 25%**

## Unit 3

### Thermodynamics

- Thermodynamics (only introduction)
- System and surrounding- work & heat, state function, thermodynamic process, internal energy, enthalpy, free energy, maximum work function.
- First law of thermodynamics
- Heat capacity, specific and molar heat capacity, heat capacity at constant volume and pressure and their relationship
- Work done in adiabatic and isothermal reversible expansion of an ideal gas.
- Second law of thermodynamics
- Carnot cycle and its efficiency
- Concept of entropy ; entropy change for an ideal gas under different conditions, entropy change for mixture of ideal gases
- Gibbs-Helmholtz equation, Van Hoff Isochore and Isotherm, Numericals

**Number of lectures: 12**

**Weightage: 25%**

## Unit 4

### Analytical Chemistry

- Introduction to Analytical Chemistry
  - Classification of Classical and Electro analytical Techniques.
  - Literature of Analytical Chemistry(Names of Author and Publishers for Any Ten Books, Journals and Reviews)
  - Criterion for Selection of analytical Techniques.
  - Analytical Data Treatment
- Error, Types of errors, Accuracy and Precision. Statistical Terms: Mode, Average, Median, Deviation, Average Deviation, Relative Average Deviation, Standard Deviation & Coefficient of variance.
- Q-Test for the rejection of result and related numerical, Grubb's Test

**REFERENCES:**



# KADI SARVA VISHWAVIDYALAYA

1. 'Concise Inorganic Chemistry' J.D.Lee, 5 <sup>th</sup> edn.
2. Text book of Organic Chemistry, ArunBahal, S.Chand.
3. Principal of Physical Chemistry by Puri, Sharma, Pathania.
4. Analytical Chemistry, Garry D.Christain.

## INSTRUCTION STRATEGIES

1. Interactions with the students to understand the level of students
2. Explaining & Discussing the major terminologies related to Chemistry
3. Teaching the topics included in the syllabus with the help of teaching aids like OHP, LCD (Power point presentation), Notes, Question Banks, References and Reprints / Copy of Articles, Models, Diagrams
4. Assistance in solving of questions from our question bank.

## TEACHING AND EXAMINATION

UNIT	Examination Scheme % Weightage	Teaching Scheme No. of Lecture
Unit 1	25	12
Unit 2	25	12
Unit 3	25	12
Unit 4	25	12
Total	100	48



# KADI SARVA VISHWAVIDYALAYA

## Semester II

### CCH 201-Fundamentals of Chemistry- II

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the chemical technology.

**LEARNING OUTCOMES:**

- Understand the concept of chemical sciences.
- Develop an understanding of the chemicals and its effects.
- Gain knowledge about the chemistry existing in and around the society.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 30 marks and End Term Examination conducted by University examination for 70 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
CCH- 201	Fundamentals of Chemistry II	4	4	3	30	70	100

### COURSE CONTENT

**Number of lectures: 12**

**Weightage: 25%**

**Unit 1:**

**(a) Coordination Compounds**

- Definition
- Nomenclature of Complex.
- Werner's theory and its experimental verification.
- Concept of Effective Atomic Numbers (E.A.N.) for Coordination Compounds.
- Limitations of Valence bond theory of transition metal Complexes.
- An Elementary idea of (C.F.T.) Crystal field splitting of d-orbital in Oh and Td.
- Factors affecting the crystal field splitting.
- Application of common complexes & chelates.

**(b) Actinide**

- Electronic Configuration.
- Oxidation state, actinide contraction
- Synthesis of Plutonium



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**Number of lectures: 12**

**Weightage: 25%**

## **Unit 2**

Stereo Chemistry Of Organic Compounds

### **Introduction of Stereo Isomers;**

#### **• Optical isomerism :**

General, Discussion of elements of symmetry, Molecular chirality, Enantiomers, Optical activity, Properties of enantiomers, Chiral and achiral molecules with two stereogenic centers, Diastereomers, Threo and Erythrodiastereomers, Meso compounds.

#### **• Geometrical isomerism:**

Definition and general discussion of geometric isomers, General methods of structure determination (physical methods), E-Z nomenclature (Simple illustration should be given ).

#### **• Conformational isomerism:**

Definition, Conformational analysis of ethane, n-butane with rotational and torsional diagram, Conformation of cyclo hexane, Axial and equatorial bonds, Newmann projection, Show horse formula, Fisher & flying wedge formula, Difference between conformation and configuration.

**Number of lectures: 12**

**Weightage: 25%**

## **Unit 3**

### **(a) Chemical Kinetics**

- Introduction of following terms.
- Rate of reaction, Order of reaction, Molecularity, pseudo order reaction, ar
- Rate equation for zero, first and second order reaction. ( $a=b$ ), ( $a \neq b$ )
- Characteristics of second order reaction.
- Rate equation for third order reaction ( $a=b=c$ )
- Characteristics of third order reaction.
- Numerical.

### **(b) Nuclear Chemistry**

- Concept of Nuclear particle.
- Definition of Isotopes, Isotones, Isobars, Isomers.
- Packing fraction.
- Nuclear binding energy.
- Nuclear coulomb barrier.
- Rate of ratio active disintegration, half life period and Average life period.
- Rutharford&Sodi's law (Group transfer law)
- Numerical.

**Number of lectures: 12**

**Weightage: 25%**

## **Unit 4**

### **Principle, Mechanism and Applications of,**

- Acid-Base Titrations (strong acid Vs strong Base).
- Redox Titrations ( $\text{Fe(II)}$  vs  $\text{KMnO}_4$ )
- Complexo metric Titrations ( $\text{Ca}^{+2}/\text{Mg}^{+2}$  vs EDTA)
- Precipitation Titrations (  $\text{Cl}^-$  vs  $\text{AgNO}_3$ ).
- Related Numericals



# KADI SARVA VISHWAVIDYALAYA

## REFERENCES:

1. 'Concise Inorganic Chemistry' J.D.Lee, 5 <sup>th</sup> edn.
2. Text book of Organic Chemistry, ArunBahal, S.Chand.
3. Principal of Physical Chemistry by Puri, Sharma, Pathania.
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## TEACHING AND EXAMINATION

UNIT	Examination Scheme % Weightage	Teaching Scheme No. of Lecture
Unit 1	25	12
Unit 2	25	12
Unit 3	25	12
Unit 4	25	12
Total	100	48



# KADI SARVA VISHWAVIDYALAYA

## Semester I

### CMAT 101- Mathematics I (W.E.F. June 2017)

#### Rationale:

This course is designed to enable students to acquire the understanding and practice the applications of Calculus, Vector Analysis and three dimensional Geometry.

#### Learning Outcome:

After successfully completion of the course, the student will be able to ...

- Find the  $n^{\text{th}}$  derivative of a function as well as the  $n^{\text{th}}$  derivative of the product of two functions.
- Practice the applications of definite integrals for (a) summation of the series (b) find the surface area and volume.
- Know about gradient, divergent and curl
- Relation between Polar, Spherical and cylinder coordinates and Geometrical importance of sphere, cone, cylinder and conicoids.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 45 marks and End Term Examination conducted by University examination for 105 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
CMAT- 101	Mathematics-I	6	6	3	45	105	100

#### COURSE CONTENT

**Number of lectures: 18**

**Weightage: 25%**

#### **Unit-1 : Successive differentiation:**

Successive Derivatives, Some standard results for  $n^{\text{th}}$  derivatives, Leibnitz's Theorem and its examples. Cauchy's Mean Value Theorem.

Taylor's Therom (without proof),Maclaurians series and its examples. Expansion of power series of  $\sin x, \cos x, e^x$ .





# KADI SARVA VISHWAVIDYALAYA

**Number of lectures: 18**

**Weightage: 25%**

**Unit-2 : Integration**

Reduction formula  $\int_0^{\pi/2} \sin^n \theta d\theta, \int_0^{\pi/2} \cos^n \theta d\theta, \int_0^{\pi/2} \sin^m \theta \cos^n \theta d\theta, m, n \in \mathbb{N}$ .

Application of definite integrals to (a) Summation of the series (b) Rectification  
(c) Surface and volume revolution.

**Number of lectures: 18**

**Weightage: 25%**

**Unit-III : Vector Analysis**

(a) Vector analysis : scalar and vector product of three vectors, product of four vectors, reciprocal vectors, vector differentiation, gradient, divergent and curl.

(b) Polar co-ordinates, spherical and cylinder coordinates and their relations.

**Number of lectures: 18**

**Weightage: 25%**

**Unit-IV : Sphere, Cone and Cylinder and introduction to Conicoids:**

(a) **Sphere:** plane section of sphere, intersection of two sphere, intersection of sphere and line, power at a point, tangent plane and normal. Plane of contact, angle of intersection of two spheres, condition of orthogonality.

(b) **Cone and cylinder:**

Definition of cone, vertex, guiding curve, generators, equation of a cone with a given vertex and a guiding curve, right circular cone with given vertex, axis and semi vertical angle.

Definition of a cylinder, equation of a cylinder whose generators intersect a given cone and are parallel to a given line, equation of a right circular cylinder.

(c) **Concoid:** Standard equation of ellipsoid, hyperboloid of one and two sheets, Elliptic paraboloid and hyperbolic paraboloid.

## REFERENCES:

1. Differential Calculus, by Shantinarayan.
2. Integral Calculus, by Shantinarayan.
3. Vector Analysis, by Murry R. Spiegel.
4. Vector Analysis, by Dr.K.S.Rawat, SARUP & SONS, DELHI
5. Introduction to Vector Analysis, Fifth Edition, by Herry F. Davis, Arther David Saider
6. Analytic Geometry and Calculus by Gordon Fuller & Robert M. Parker.
7. Analytic Geometry by Gordon Fuller (5th edition) (Addison-Wesley).
8. Analytic Geometry of two and three dimensions, Second Editions, by Hema Vasavada, Vallabh Vidyanagar, 1998.
9. Analytic Solid Geometry by Shantinarayan (S. Chand & Co.)
10. Coordinate Geometry by P. Balasubramanyam, K.G. Subramaniam and G.R. Venkatraman (Tata Mc Graw Hill Publ. Co.)
11. College Mathematics-CCMAT101, Nirav Prakashan



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## INSTRUCTION STRATEGIES

1. Interactions with the students to judge the subject-understanding of students
2. Explaining & Discussing the major terminologies and formulae related to the course
3. Use of teaching aids like OHP, LCD (Power point presentation), Notes, Question Banks, References and Reprints / Copy of Articles, Models, Diagrams
4. Assistance in solving of questions from our question bank.

## TEACHING AND EXAMINATION

<b>UNIT</b>	<b>Examination Scheme % Weightage</b>	<b>Teaching Scheme No. of Lecture</b>
Unit 1	25	18
Unit 2	25	18
Unit 3	25	18
Unit 4	25	18
Total	100	72



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## Semester II

### CMAT 201 Mathematics II (W.E.F. June 2017)

#### Rationale :

This course is designed to enable students to acquire the understanding and practice the applications of Complex number, De Moivre's theorem, differential equations and matrices.

#### Learning Outcome :

After successfully completion of the course, the student will be able to ...

- Find the roots of a complex number, expansions of  $\sin^n\theta$ ,  $\cos^n\theta$  in terms of sine and cosine multiples of  $\theta$ .
- Applications of matrices
- Practice the applications of differential equations in real life situations.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 45 marks and End Term Examination conducted by University examination for 105 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
		6	6	3	45	105	100

#### COURSE CONTENT

**Number of lectures: 18** **Weightage: 25%**

##### Unit-I : De' Morve's theorem and its applications

- (a) Roots of a complex number
- (b) Application of Expansion of  $\sin^n\theta, \cos^n\theta$ ,  $n \in \mathbb{N}$  in terms of sine and cosine of multiples of  $\theta$ .
- (c) Expansion of  $\sin n\theta$ ,  $\cos n\theta$  and  $\tan n\theta$  in terms of sine, cosine and tangent. Respectively

**Number of lectures: 18** **Weightage: 25%**

##### Unit-II : More Applications on De' Morve's theorem

- (a) Exponential, Circular and hyperbolic function, Logarithmic and inverse functions.
- (b) Sequence and series: Definition of sequence, series. Definition of convergence of sequence and series, partial sum, comparison test, ratio test, root test and its examples.

**Number of lectures: 18** **Weightage: 25%**

##### Unit-III : Differential Equations

- (a) Linear differential equation  $\frac{dy}{dx} + Py = Q$ , P and Q are functions of x, Bernoulli's differential



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equation. (b) Differential equation of first order and higher degree solvable for s, solvable for y, solvable for  $P = \frac{dy}{dx}$ .

(c) Solution of Clairaut's and Lagrange's differential equation.

(d) Linear differential equation with constant coefficients.

**Number of lectures: 18**

**Weightage: 25%**

## **Unit-IV : Matrices**

Introduction of matrices, different types of matrices, operations on matrices, theorems on matrices, Symmetric and skew -symmetric matrices, Hermitian and skew-

Hermitian matrices, linear dependence and independence of row and column matrices. Row rank, Column rank and rank of matrix, Row reduced Echelon form of a matrix and matrix inversion using it.

## **REFERENCES:**

1. Complex Variables and Application, by Ruel V. Churchill & James Ward Brown, McGraw-Hill Publishing Company, New Delhi.
2. Complex Analysis, by J.V.DESHPANDE, Tata McGRAW-Hill Publishing Co. Ltd. New Delhi
3. Theory of Matrices, by B.S.Vatssa, 2<sup>nd</sup> Edition, Wiley Easterns Ltd
4. Matrix Operations, by Schaum's Series McGRAW-HILL Book Co.
5. Advanced Engineering Mathematics, Fifth Ed.- Kreyszig E. [New Age International Publishing Co.]
6. Higher Engineering Mathematics, Thirty-fifth edition. Grewal, B.S. [KhannaPubl]
7. College mathematics-CCMAT-201, Nirav Prakashan

## **INSTRUCTION STRATEGIES**

1. Interactions with the students to gauge the subject-understanding of students
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4. Assistance in solving of questions from our question bank.

## **TEACHING AND EXAMINATION**

<b>UNIT</b>	<b>Examination Scheme % Weightage</b>	<b>Teaching Scheme No. of Lecture</b>
Unit 1	25	18
Unit 2	25	18
Unit 3	25	18
Unit 4	25	18
Total	100	72



# KADI SARVA VISHWAVIDYALAYA

## Semester I

### CMB 101- FUNDAMENTALS OF MICROBIOLOGY (W.E.F June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the microbiological world, its origin and structure to help the potential application of the unexplored and unidentified organisms in the industry.

#### **LEARNING OUTCOMES:**

- Understand the concept of origin of life, bacterial classification.
- Develop an understanding of the biodiversity and awareness of the microbes.
- Gain knowledge about the structure, function and applications of the bacterial cell.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 30 marks and End Term Examination conducted by University examination for 70 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
CMB- 101	Fundamentals of Microbiology	4	4	3	30	70	100

#### **COURSE CONTENT**

<b>Unit 1: History, Taxonomy and Classification:</b>	<b>Number of lectures: 12</b> <b>Weightage: 25%</b>
A. <u>History</u>	
• History of microbiology- Contributions of pioneers.- Spontaneous generation <i>versus</i> biogenesis hypothesis.	
• Introduction to major groups of microorganisms: Bacteria, Fungi, Algae, Protozoa, Viruses	
• Applied areas of Microbiology.	
•B. Classification	
• Bacterial nomenclature.	
• Whittaker's classification system of prokaryotes.	
• Introduction to Bergey's manual of determinative and systematic classification.	

<b>Unit 2</b>	<b>Number of lectures: 12</b> <b>Weightage: 25%</b>
<b>Microscopy and Staining Techniques</b>	
• Bright Field, Dark Field, Phase Contrast, Fluorescence, Scanning and Transmission Electron Microscopy.	



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- Stains and staining techniques- Stains and Dyes: classification and types.
- Types of staining- Simple (Monochrome, Negative), Differential (Gram and Acid fast) and Structural Staining

## Unit 3

**Number of lectures: 12**

**Weightage: 25%**

### Morphology of Bacteria

- Size, shape and arrangement of bacterial cells.
- Structures external to cell wall- Flagella, pili, capsule, sheath and prosthecae.
- Structures internal to cell wall- Cell membrane, nuclear material, cell wall (Protoplast and Spheroplast), spores, cytoplasmic inclusions, magnetosomes and plasmids.

## Unit 4

**Number of lectures: 12**

**Weightage: 25%**

### Introduction to Fungi and Viruses

- Introduction to viruses, viroids and prions.
- Structure and classification of viruses
- Animal, Plant and Bacterial viruses.
- Introduction to Fungi
- Physiology and nomenclature of Fungi
- Economic importance of Fungi and Viruses

### REFERENCES

1. Microbiology, Authors- Pelczar, Chan and Kreig.
2. General Microbiology, Authors- Stainer RY. Ingharam JL. Wheelis ML. Painter PR

### SUGGESTED BOOKS

3. Microbiology- an Introduction- (8th Edn), Authors- Tortora, G.J., Funke, B.R., Case, C.L.
4. Biology of Microorganisms, Authors- Brock and Madigan.
5. Fundamental Principles of Bacteriology, Author- A.J. Salle.
6. Introduction to Microbiology, Authors- Ingraham and Ingraham.
7. Microbial Physiology, Authors- Moat and Foster.
8. Prokaryotic Development Authors- Brun, Y.V. and Shimkets, L.J. 2000, ASM Press.
9. Elementary Microbiology, Author- H. A. Modi
10. Textbook of Microbiology, Authors- Dubey and Maheshwari.
11. Microbiology, A Practical Approach. Authors- Patel and Phanse
12. Experiments in Biotechnology. Authors- Nighojkar and Nighojkar
13. General Microbiology, Authors- Powar and Daginawala.
14. Fundamentals in Microbiology, Authors- Frobisher and Hinsdinn.
15. Microbiology, Author- S.S. Purohit.
16. Immunology, Microbiology and Biotechnology, Author- K.C. Soni.



# KADI SARVA VISHWAVIDYALAYA

## INSTRUCTION STRATEGIES

1. Interactions with the students to understand the level of students
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4. Assistance in solving of questions from our question bank.

## TEACHING AND EXAMINATION

<b>UNIT</b>	<b>Examination Scheme % Weightage</b>	<b>Teaching Scheme No. of Lecture</b>
Unit 1	25	12
Unit 2	25	12
Unit 3	25	12
Unit 4	25	12
Total	100	48



# KADI SARVA VISHWAVIDYALAYA

## Semester II

### CMB 201- MICROBIAL PHYSIOLOGY (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the microbiological physiology and nutrition and its metabolic diversity.

#### LEARNING OUTCOMES:

- Understand the concept of nutrition of the bacteria.
- Develop an understanding of the growth and various parameters affecting to the growth.
- Gain knowledge about the microbial control and their inhibition..

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 30 marks and End Term Examination conducted by University examination for 70 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
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					Mid Term	End Term	
CMB- 201	Microbial Physiology	4	4	3	30	70	100

#### COURSE CONTENT

##### Unit 1:

**Number of lectures: 12**

**Weightage: 25%**

- **Cultivation and Pure Culture Techniques**
- Nutritional requirements and nutritional types of bacteria.
- Classification of bacteria on the basis of growth supporting environmental factors such as Oxygen, Temperature, pH, osmotic pressure, Salt and Hydrostatic pressure.
- Bacteriological media (types and uses), cultivation of aerobic and anaerobic microbes.
- Isolation of microorganisms, pure culture and cultural characteristics.

##### Unit 2

**Number of lectures: 12**

##### Microbial Growth

**Weightage: 25%**

- Introduction to growth rate, generation time.
- Normal growth curve of bacteria.
- Continuous growth and synchronous growth
- Efficiency of growth, growth yield, maintenance of energy.





# KADI SARVA VISHWAVIDYALAYA

## Unit 3

Number of lectures: 4

Weightage: 15%

### Measurement and Preservation Methods

- Criteria for growth measurement,
- Cell mass, Cell number and cell constituent (C -Content N-Content, ATP Bioluminetry Method) measurements methods
- Maintenance and preservation of microbial cultures.

## Unit 4

Number of lectures: 20

Weightage: 35%

### Control of Microorganisms

- Concept of sterilization, disinfection, aseptic and sanitation.
- Physical methods of control- Temperature, radiation, desiccation, osmotic pressure, filtration.
- Chemical methods of control- Phenol, alcohol, halogens, heavy metals, dyes, detergents, quaternary ammonium compounds, aldehydes and gaseous chemosterilizers.
- Evaluation of antimicrobial potency of disinfectants and antiseptics- Tube dilution, Agar diffusion. Phenol coefficient.

### REFERENCES:

1. Microbiology, Authors- Pelczar, Chan and Kreig.

2. Elementary Microbiology, Author- H. A. Modi

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9. Prokaryotic Development Authors- Brun, Y.V. and Shimkets, L.J. 2000, ASM Press.

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15. Microbiology, Author- S.S. Purohit.

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17. Microbiology, Author- R.P.Singh



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Unit 1	25	12
Unit 2	25	12
Unit 3	15	6
Unit 4	35	20
Total	100	48



# KADI SARVA VISHWAVIDYALAYA

## Semester I

### CPH-101 Fundamentals of Physics – I (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the Physical world, its origin and structure to help the potential application of the unexplored and unidentified organisms in the industry.

#### **LEARNING OUTCOMES:**

- Understand the concept of origin of Physical Science.
- Develop a concrete understanding of the Physical systems around us.
- Gain knowledge about the various laws of nature, new frontier of physics with potential applications in our day by day life.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 30 marks and End Term Examination conducted by University examination for 70 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
CPH- 101	Fundamentals of Physics - 1	4	4	3	30	70	100

### COURSE CONTENT

#### Unit - 1

Lectures - 12

Weightage – 25%

#### **Electromagnetism:**

Introduction to the Electromagnetic Spectrum, Applications of the different regions of the Electromagnetic Spectrum, Gauss's Law for Electricity, Gauss's Law for Magnetism, Ampere's Law, Displacement Current, Faraday's Law, Introduction to Maxwell's Equations (Equations and their understanding only), Illustrative Examples.

#### **Black Body Radiation:**

Introduction to Blackbody Radiation, Relation between Temperature and Wavelength, Plank's Law, Wein's Displacement Law, Stefan Boltzmann Law, Illustrative examples.



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**Unit - 2**

**Lectures - 12**

**Weightage – 25%**

**Waves:**

Theory of Resonator – Helmholtz Resonator, Dependence of the Frequency of Resonator on the size and the Shape of the Mouth, Velocity of Transverse Waves along a Stretched String, Laws of Transverse Vibration of Strings, Melde's Experiment, Kundt's Tube, Illustrative Problems.

**Ultrasonic waves:**

Ultrasonic, Production of Ultrasonic Waves: Galton Whistle, Magnetostriction Oscillator, Piezo-Electric Oscillator, Detection of Ultrasonic Waves, Applications of Ultrasonic waves, Illustrative Problems.

**Unit - 3**

**Lectures - 12**

**Weightage – 25%**

**D.C. Circuits:**

Simple R-C Circuit- Charging a Capacitor, Time Constant, Discharging a Capacitor, Simple R-L Circuit - Growth and Decay of Current Helmholtz equation, Measurement of high resistance by method of leakage, Comparison of capacities by De Sauty's Method, Series L-C-R Circuit, Parallel L-C-R Circuit, Illustrative Problems.

**Network Theorems:**

Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Theorem, Illustrative Problems.

**Unit - 4**

**Lectures - 12**

**Weightage – 25%**

**Mechanics of a single particle and of particles:**

Motion of a particle subjected to a resistive force, mechanics of a system of particle, Motion of a system with variable mass.

**Motion in a central force field:**

Equivalent one body problem, Motion in central force field, General features of the motion, Motion in an inverse square law force field, Equation of the orbit, Kepler's law of planetary motion, Illustrative Examples.

**REFERENCES:**

1.	Sears and Zeemansky's University Physics with Modern Physics by Hugh D. Young 13th edition (Pearson)
2.	Fundamental of Physics by Halliday, Resnik, Walker (Wiley-India Edition)
3.	Concepts of Physics, Volume 1 and 2, by H C Verma (Bharti Bhawan)
4.	The Feynman Lectures on Physics, Volume I, II and III, by Feynman, Leighton, Sands (New Millennium ed. Edition)



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5.	Classical Mechanics by Takwale and Puranik, McGraw Hill Education
6.	Waves and Oscillations by N. Subrahmanyam & Brijlal (Vikas Publishing House Pvt. Ltd. New Delhi)
7.	Basic Electronics and Linear Circuits - Bhargava, Gupta, Kulshreshtha, Tata McGraw-Hill Education.
8.	The Art of Electronics by Paul Horowitz and Winfield Hill, Cambridge University Press; 2nd Revised ed. edition
9.	Basic Electronics by B. L. Theraja (S.Chand)
10.	Electronics Devices and Circuit by J. B. Gupta, 5/e, S. K. Kataria & Sons-New Delhi
11.	Principles of Electronics by V. K. Mehta & Rohit Mehta, 11/e, S. Chand-New Delhi.
12.	<a href="http://www.feynmanlectures.info/">http://www.feynmanlectures.info/</a>
13.	<a href="http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html">http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html</a>
14.	<a href="https://www.britannica.com/">https://www.britannica.com/</a>
15.	<a href="http://hypertextbook.com/">http://hypertextbook.com/</a>
16.	<a href="https://phet.colorado.edu/">https://phet.colorado.edu/</a>

## Note:

A good number of numerical examples are expected to be covered during the prescribed lectures.

## INSTRUCTION STRATEGIES

1. Interactions with the students to understand the level of students.
2. Explaining & discussing the major terminologies related to Physics.
3. Teaching the topics included in the syllabus with the help of teaching aids like OHP, LCD (Power point presentation), Notes, Question Banks, References and Reprints / Copy of Articles, Models, Diagrams etc.
4. Assistance in solving of questions from the question bank.

## TEACHING AND EXAMINATION

UNIT	Examination Scheme % Weightage	Teaching Scheme No. of Lecture
Unit 1	25	12
Unit 2	25	12
Unit 3	25	12
Unit 4	25	12
<b>Total</b>	<b>100</b>	<b>48</b>



# KADI SARVA VISHWAVIDYALAYA

## Semester II

### CPH-201 Fundamentals of Physics – II (W.E.F June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the Physical world, its origin and structure to help the potential application of the unexplored and unidentified organisms in the industry.

#### LEARNING OUTCOMES:

- Understand the concept of origin of Physical Science.
- Develop a concrete understanding of the Physical systems around us.
- Gain knowledge about the various laws of nature, new frontier of physics with potential applications in our day by day life.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 30 marks and End Term Examination conducted by University examination for 70 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
CPH- 201	Fundamentals of Physics - 2	4	4	3	30	70	100

#### COURSE CONTENT

##### Unit - 1

Lectures - 12

Weightage – 25%

##### **Thermodynamics:**

Introduction to Zeroth Law of Thermodynamics, First Law of Thermodynamics and Second Law of Thermodynamics.

THE FIRST LAW OF THERMODYNAMICS - Internal Energy and the First Law of Thermodynamics, Kinds of Thermodynamic Processes

THE SECOND LAW OF THERMODYNAMICS - Directions of Thermodynamic Processes, Heat Engines, Refrigerators, The Second Law of Thermodynamics, The Carnot Cycle, Entropy -



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Entropy in Reversible Process, Entropy in Cyclic Process, Entropy in Irreversible Process, Illustrative Problems.

## Unit - 2

Lectures - 12

Weightage – 25%

### Refraction through Lenses:

Principal Foci, Least possible distance between an object & its real image in a convex lens, Derivation produced by a thin lens, Equivalent Focal Length of Two Thin Lenses Separated by a Finite Distance, Cardinal Points of an Optical system, Principal Foci and Focal Planes, Principal Points and Principal Planes, Nodal Points, Illustrative Problems.

### Interference:

Interference in thin films, Interference due to reflected light, Interference due to transmitted light, Interference due to wedge shaped thin film, Newton's Rings, Determination of the wavelength of sodium light using Newton's Rings, Refractive Index of a Liquid using Newton's Rings. Illustrative Problems.

## Unit - 3

Lectures - 12

Weightage – 25%

### Electrostatics:

Coulomb's Law, Electric Field, Gauss's Law – Integral Form and Differential form, Application of Gauss's Law – The field due to an infinite layer of positive charge with uniform surface density, The field outside an isolated charged sphere, The field due to a spherical shell of charge, The field at point P inside a uniformly charged sphere of radius R, Uniformly charged infinite cylinder, Field between concentric sphere which have equal and opposite charge.

## Unit - 4

Lectures - 12

Weightage – 25%

### Rectifier and Filter circuits:

The Half Wave Rectifier - Output Voltage, Output Current, RMS values, Efficiency, Ripple factor, Regulation, The Full Wave Rectifier - Output Voltage, Output Current, RMS values, Efficiency, Ripple factor, Regulation, The Bridge Rectifier.

The Inductor filter, The Capacitor filter, The Choke input filter, C-L-C Filter.

### Alternating Current:

Phasors and Alternating Currents, Resistance and Reactance, The L-R-C Series Circuit, Power in Alternating-Current Circuits, Resonance in Alternating-Current Circuits, Transformers.

## REFERENCES:

- |    |  |
|----|--|
| 1. | Sears and Zeemansky's University Physics with Modern Physics by Hugh D. Young 13th edition (Pearson) |
|----|--|



# KADI SARVA VISHWAVIDYALAYA

2.	Fundamental of Physics by Halliday, Resnik, Walker (Wiley-India Edition)
3.	Concepts of Physics, Volume 1 and 2, by H C Verma (Bharti Bhawan)
4.	The Feynman Lectures on Physics, Volume I, II and III, by Feynman, Leighton, Sands (New Millennium ed. Edition)
5.	Classical Mechanics by Takwale and Puranik, McGraw Hill Education
6.	Waves and Oscillations by N. Subrahmanyam & Brijlal (Vikas Publishing House Pvt. Ltd. New Delhi)
7.	Basic Electronics and Linear Circuits - Bhargava, Gupta, Kulshreshtha, Tata McGraw-Hill Education.
8.	The Art of Electronics by Paul Horowitz and Winfield Hill, Cambridge University Press; 2nd Revised ed. edition
9.	Basic Electronics by B. L. Theraja (S.Chand)
10.	Electronics Devices and Circuit by J. B. Gupta, 5/e, S. K. Kataria & Sons-New Delhi
11.	Principles of Electronics by V. K. Mehta & Rohit Mehta, 11/e, S. Chand-New Delhi.
12.	<a href="http://www.feynmanlectures.info/">http://www.feynmanlectures.info/</a>
13.	<a href="http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html">http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html</a>
14.	<a href="https://www.britannica.com/">https://www.britannica.com/</a>
15.	<a href="http://hypertextbook.com/">http://hypertextbook.com/</a>
16.	<a href="https://phet.colorado.edu/">https://phet.colorado.edu/</a>

## Note:

A good number of numerical examples are expected to be covered during the prescribed lectures.

## INSTRUCTION STRATEGIES

1. Interactions with the students to understand the level of students.
2. Explaining & discussing the major terminologies related to Physics.
3. Teaching the topics included in the syllabus with the help of teaching aids like OHP, LCD (Power point presentation), Notes, Question Banks, References and Reprints / Copy of Articles, Models, Diagrams etc.
4. Assistance in solving of questions from the question bank.

## TEACHING AND EXAMINATION

UNIT	Examination Scheme % Weightage	Teaching Scheme No. of Lecture
Unit 1	25	12
Unit 2	25	12
Unit 3	25	12
Unit 4	25	12
<b>Total</b>	<b>100</b>	<b>48</b>





## Semester I

### EGC 101- Communication Skills – I (W.E.F June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of Phonetics. The students would be made familiar with the stress, punctuation and fluency of English words and sounds. The course would help students to know the sentence patterns and grammatical structures.

#### **LEARNING OUTCOMES :**

- (1) To enable the student to pronounce correctly with proper stress and intonation, to use the conversational structure appropriately.
- (2) To describe and characterise spoken English both from the grammatical and the discourse perspectives.
- (3) To describe guidelines and identify the difficulties Indian students and users of English as a foreign language have in the use of the English language in oral contexts.
- (4) To draw comparisons between oral and written language through the use of representative oral and written language.

#### **TEACHING AND EVALUATION SCHEME:**

The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 15 marks and End Term Examination conducted by University examination for 35 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
EGC-101	Communication Skills - I	2	2	2	15	35	50



# KADI SARVA VISHWAVIDYALAYA

## COURSE CONTENT

### Section A

**Number of lectures: 12**

**Weightage: 50%**

#### **Unit – I Introduction to Communication:**

- (a) Meaning of Communication
  - Originate of the word “Communication”
  - Definition of Communication
- (b) Process of Communication
  - Elements of process (Sender, Encode, Message, Media, Receiver, Decode & Feedback)
  - Importance of Feedback in process
  - Types of Feedback
- (c) Seven C’S of Communication
  - Significance of 7 C’S in Communication
  - 7 C’S in detail

### Section-B

**Number of lectures: 12**

**Weightage:50%**

#### **Unit – II : Effective Communication**

- (a) Channels of Communication
  - Meaning of Communication Channel
  - Types of Channel (Horizontal, Grapevine, Downward and Upward Channel)
- (b) Barriers to effective Communication
  - Meaning of Barrier
  - Role of barrier to effective Communication
  - Types of Barrier ( Physical Barrier, Language Barrier, Emotional Block, Psychological Barrier, Psycho-Sociological Barrier, Cultural barrier)
- ( c) Importance of Communication and Feedback



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## RECOMMENDED READING :

1. Business Communication, Meenakshi Raman & Sangeeta Sharma, Oxford
2. Technical Communication: Principles and Practice, Meenakshi Raman & Sangeeta Sharma, Oxford
3. Communicative English: Prakash Khuman & Bhupesh Gupta, Books India Publication

## INSTRUCTION STRATEGIES

1. Interactions with the students to understand the level of students.
2. Explaining & discussing English language structures.
3. Teaching the topics included in the syllabus with the help of teaching aids like OHP, LCD (Power point presentation), Notes, References, Copy of Articles, Models, Diagrams

## TEACHING AND EXAMINATION

UNIT	Examination Scheme % Weightage	Teaching Scheme No. of Lecture
Unit 1	50	12
Unit 2	50	12



# KADI SARVA VISHWAVIDYALAYA

## Semester II

### EGC 201- Communication Skills – II (W.E.F. June 2017)

#### **RATIONALE:**

This course is designed to enable students to acquire basic understanding of Phonetics. The students would be made familiar with the stress, punctuation and fluency of English words and sounds. The course would help students to know the sentence patterns and grammatical structures.

#### **LEARNING OUTCOMES :**

- (1) To enable the student to initialize communication.
- (2) To facilitate the student to communicate verbally using elementary English.

#### **TEACHING AND EVALUATION SCHEME:**

The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 15 marks and End Term Examination conducted by University examination for 35 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
EGC-102	Communication Skills - II	2	2	2	15	35	50



## COURSE CONTENT

### Section A

**Number of lectures: 12 Weightage: 50%**

#### **Unit – I Verbal Communication:**

- (a) Meaning of Verbal Communication
  - Definitions of Verbal Communication
- (b) Types of Verbal Communication
  - Tone
  - Volume
  - Speech
  - Choices of the Words
- (c) Advantages and Disadvantages of Verbal Communication
  - Advantage/Positive aspects of Verbal Communication by point
  - Disadvantage/Negative aspects of Verbal Communication by point
- (d) Objective of Verbal Communication

### Section-B

**Number of lectures: 12 Weightage: 50%**

#### **Unit – II Non-Verbal Communication :**

- (a) Meaning of Non-Verbal Communication
  - Definitions of Non-Verbal Communication
- (b) Types of non-verbal communication
  - Kinesics
  - Haptics
  - Physical Appearance
  - Oculistics
  - Proxemics
  - Para Language
  - Chronemics
- (c) Advantages and Disadvantages of non-verbal Communication
  - Advantage/Positive aspects of Non Verbal Communication by point
  - Disadvantage/Negative aspects of Non Verbal Communication by point
- (d) Importance of non-verbal Communication

**ROLE PLAY (For Self Practice)**



# KADI SARVA VISHWAVIDYALAYA

## RECOMMENDED READING :

1. Business Communication, Meenakshi Raman & Sangeeta Sharma, Oxford
2. Technical Communication: Principles and Practice, Meenakshi Raman & Sangeeta Sharma, Oxford
3. Communicative English: Prakash Khuman & Bhupesh Gupta, Books India Publication

## INSTRUCTION STRATEGIES

1. Interactions with the students to understand the level of students.
2. Explaining & discussing English language structures.
3. Teaching the topics included in the syllabus with the help of teaching aids like OHP, LCD (Power point presentation), Notes, References, Copy of Articles, Models, Diagrams

## TEACHING AND EXAMINATION

UNIT	Examination Scheme % Weightage	Teaching Scheme No. of Lecture
Unit 1	50	12
Unit 2	50	12



# KADI SARVA VISHWAVIDYALAYA

## Semester I

### FCG 101- Basic English – I (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of English grammar. The course would help students to fortify their knowledge of English and strengthen their basic communication abilities.

#### **LEARNING OUTCOMES:**

- Understand the functions and usage of tense, articles and primary auxiliary.
- Develop language skills of reading through filling in appropriate words in blanks, correcting errors, choosing correct forms out of alternative choices, joining clauses, sentences as directed, replacing indicated sections with single word / opposite / synonyms etc.
- Acquire interest in English language and literature through textbook lessons.
- Acquire additional vocabulary as prescribed in the textbook.
- Comprehend the basic language structure through reading paragraph and answering the questions based on it.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 15 marks and End Term Examination conducted by University examination for 35 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
FCG- 101	Basic English – I	2	2	2	15	35	50

#### Course Content

Unit 1 : Lesson 1 to 5 <ul style="list-style-type: none"> <li>• ‘Fantasy’ – a collection of short stories edited by V. Sasikumar</li> </ul>	Number of Lectures: 08 Weightage : 30%
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Unit 2 : <ul style="list-style-type: none"> <li>• Sentence Framing through vocabulary (Text Based)</li> </ul>	Number of Lectures: 02 Weightage : 10%
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Number of Lectures: 10

Weightage : 40%

Unit 3 :

- Usage of Tenses, Primary Auxillaries, Articles in daily life Presentation skill
  - 4<sup>PS</sup> (Planning, Preparation, Practice, Presentation)
  - Effective use of A/V aids
  - Do's and Don't's of Presentation skill

Number of Lectures: 04

Weightage : 20%

Unit 4 :

- Comprehension of an unseen passage

## REFERENCES:

1. High School English Grammar – Wrenn & Martin
2. Contemporary English Grammar – David Green
3. Muralikrishna C., Sunita Mishra “Communication Skills for Engineers” 2nd edition, Pearson, New Delhi 2010
4. Lougheed Lin, “Business Correspondence: A Guide to Everyday Writing”, Longman, Pearson Education, Inc,2003

## INSTRUCTION STRATEGIES

1. Interactions with the students to understand the level of students
2. Explaining & discussing English language structures.
3. Teaching the topics included in the syllabus with the help of teaching aids like OHP, LCD (Power point presentation), Notes, Question Banks, References and Reprints / Copy of Articles, Models, Diagrams
4. Assistance in solving of questions from our question bank.

## TEACHING AND EXAMINATION

UNIT	Examination Scheme % Weightage	Teaching Scheme No. of Lecture
Unit 1	30%	8
Unit 2	10%	2
Unit 3	40%	10
Unit 4	20%	4
Total	100%	24





# KADI SARVA VISHWAVIDYALAYA

## Semester II

### FCG 102- Basic English – II (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of English grammar. The course would help students to fortify their knowledge of English and strengthen their basic communication abilities.

#### LEARNING OUTCOMES:

- Understand the functions and usage of preposition, subject-verb agreement and pronouns.
  - Develop language skills of reading through filling in appropriate words in blanks, correcting errors, choosing correct forms out of alternative choices, joining clauses, sentences as directed, replacing indicated sections with single word / opposite / synonyms etc.
- Acquire interest in English language and literature through textbook lessons.
- Acquire additional vocabulary as prescribed in the textbook.
- Develop the skill of writing on various topics.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of Mid Term examinations for 15 marks and End Term Examination conducted by University examination for 35 marks.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
FCG- 102	Basic English – II	2	2	2	15	35	50

Unit 1 : Lesson 6 to 10	Number of Lectures: 08 Weightage : 30%
<ul style="list-style-type: none"><li>• ‘Fantasy’ – a collection of short stories edited by V. Sasikumar (Orient Black Swan)</li></ul>	

Unit 2 :	Number of Lectures: 02 Weightage : 10%
<ul style="list-style-type: none"><li>• Sentence Framing through vocabulary (Text Based)</li></ul>	



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Number of Lectures: 10

Weightage : 40%

## Unit 3 :

- Usage Preposition,
- concord and pronouns
- Speaking Skills
  - Self Introduction
  - Describing a person, place, situation and event, Giving instruction
  - Making inquiries – at a bank, post-office, air-port, hospital, reservation counter

Number of Lectures: 04

Weightage : 20%

## Unit 4 :

- Comprehension (Paragraph Writing)

## REFERENCES:

1. High School English Grammar – Wrenn & Martin
2. Contemporary English Grammar – David Green
3. A Practical English Grammar - Thomson and Martinet
4. Muralikrishna C., Sunita Mishra “Communication Skills for Engineers” 2nd edition, Pearson, New Delhi 2010
5. Lougheed Lin, “Business Correspondence: A Guide to Everyday Writing”, Longman, Pearson Education, Inc, 2003

## INSTRUCTION STRATEGIES

1. Interactions with the students to understand the level of students
2. Explaining & discussing English language structures.
3. Teaching the topics included in the syllabus with the help of teaching aids like OHP, LCD (Power point presentation), Notes, Question Banks, References and Reprints / Copy of Articles, Models, Diagrams
4. Assistance in solving of questions from our question bank.

## TEACHING AND EXAMINATION

UNIT	Examination Scheme % Weightage	Teaching Scheme No. of Lecture
Unit 1	20 %	8
Unit 2	10 %	2
Unit 3	40 %	10
Unit 4	20 %	4
Total	100 %	24



# KADI SARVA VISHWAVIDYALAYA

## Semester – 1

### PBI 101- Botany Practical – I (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the cell, types of cell, type of organelles. It also provides information about cryptogamic plants (Algae and Fungi). This course will also provides brief account of anatomical structure of plants and environmental factors which affects plant life.

#### **LEARNING OUTCOMES:**

- Knowledge regarding Type of cells, Type of organelles, Cell structure and function
- To understand Life cycles of cryptogamic plants i.e. Algae and Fungi
- To study the internal structure of plant body.
- To understand environmental factors affecting plant life.

**TEACHING AND EVALUATION SCHEME:** Each practical listed in the syllabus will be explained and demonstrated in the laboratory. Students are evaluated based on the marks obtained in writing part as well as performance in the laboratory. General viva voce and subject viva voce will be conducted to analyse the knowledge of the student.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Practical Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
PBI- 101	Botany Practical - I	4	2	4 (1 Day)	-	50	50

Practical Examination					Total Marks
Hrs.	Max Marks				
	Experiments and writing	Spots	Viva	Journal	
4	30	10	5	5	50

#### **LIST OF EXPERIMENTS**

1. To study the various shape of cells through permanent / temporary slides:  
*Amoeba*, *Paramecium*, Human RBC, Nerve cell, *Spirogyra* and Onion leaf scale.



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<p>2. To study the various types of cells on the basis of Nucleus through micrographs / charts: Akaryota - Bacteriophage, Prokaryota - Cyanophycean cell &amp; Eukaryota - typical Animal &amp; Plant cell</p>
<p>3. To study the Structure of Plasmodesmata through permanent / temporary slide from Date Palm seed</p>
<p>4. To study the ultrastructure of Nucleus and Chromosomes through micrographs (SEM, TEM) / charts</p>
<p>5. To study the Life history of <i>Spirogyra</i> through: Mountings - Thallus and Reproductive structure Permanent Slides of - Thallus and Reproductive</p>
<p>6. structure To study the Life history of <i>Mucor</i> through: Specimen - Bread / Roti with <i>Mucor</i> Mountings - Mycelium and Asexual and sexual Reproductive structures Permanent Slides of - Mycelium and Asexual and sexual Reproductive structures</p>
<p>7. To study the various types of Simple (parenchyma, collenchyma and sclerenchyma) and Complex tissues (thickenings in vessels / tracheids and sieve tube) from Sunflower and <i>Cucurbita</i> stems (T.S. and L.S.) through fresh and permanent preparations.</p>
<p>8. To study the Epidermal tissue system through permanent / temporary slides: Uniseriate (Sunflower leaf) and Multiseriate (Banyan / <i>Nerium</i> leaf) epidermis Stomata structure (Dicot-<i>Hibiscus</i> &amp; Monocot-Maize) Trichomes [Unicellular-stellate (<i>Abutilon</i>); Multicellular-unbranched (<i>Tridax</i>) &amp; branched (<i>Withania</i>); Glandular (<i>Datura</i>) Motor cells in Maize leaf Cystolith in Banyan leaf Sphaeroraphides in <i>Nerium</i> leaf Velamen tissue in aerial root of Orchid Permanent slides of Periderm and Lenticel structure- <i>Tinospora</i></p>
<p>9. To study of Biotic factors through specimens/charts/photographs Positive Interrelationship Symbiosis - Mutualism: Lichens, Root nodules, Mycorrhizae Commensalism: Epiphytes - Orchid Negative Interrelationship Exploitation - Parasitism (<i>Cuscuta</i>, <i>Loranthus</i>) - Predation (<i>Nepenthus</i>, <i>Utricularia</i>)</p>
<p>10. Charts / Photographs: Pyramids (Number, Biomass and Energy)</p>



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## Semester – II

### PBI 201- Botany Practical – II (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the genetics, Mendel's laws and gene interactions. It also provides information about cryptogamic plants (bryophytes and pteridophytes). This course will also provides brief account of external structures of plants i.e. morphology of leaf, arrangement of leaf, types of leaf and different structures related to leaf. It also gives information about those plants which are used by human for economic purpose.

#### **LEARNING OUTCOMES:**

- Knowledge regarding genetics, Mendel's laws and gene interactions
- To understand Life cycles of cryptogamic plants i.e. bryophytes and pteridophytes
- To study the external structure of plant body i.e. (morphology of leaf)
- To understand plants in human welfare.

**TEACHING AND EVALUATION SCHEME:** Each practical listed in the syllabus will be explained and demonstrated in the laboratory. Students are evaluated based on the marks obtained in writing part as well as performance in the laboratory. General viva voce and subject viva voce will be conducted to analyse the knowledge of the student.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Practical Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
PBI- 201	Botany Practical - II	4	2	4 (1 Day)	-	50	50

Credits	Practical Examination					Total Marks
	Hrs.	Max Marks				
		Experiments and writing	Spots	Viva	Journal	
2	4	30	10	5	5	50



# KADI SARVA VISHWAVIDYALAYA

## LIST OF EXPERIMENTS

<p>1. To study through Examples: (A) Mendel's Experiments: Monohybrid ratio (3:1/1:2:1), (B) Dihybrid ratio (9:3:3:1) Back cross and Test cross</p>
<p>2. Epistasis: Dominance Epistasis ratio (12:3:1), Recessive Epistasis ratio (9:3:4), Double recessive Epistasis ratio (9:7) and Double dominance Epistasis ratio (15:1)</p>
<p>3. To study the Life history of <i>Marchantia</i> through: Specimen - Vegetative Thallus and thallus with Gemma cup Mountings - Thallus and Reproductive organs Permanent Slides - Thallus, Gemma cup, Antheridia, Archegonia,</p>
<p>4. Saprophyte To study the Life history of <i>Nephrolepis</i> through: Specimen - Sporophytic plant (with Vegetative and Fertile leaflets) Mountings - Hydathode, T.S. of leaflet passing through sori, Sporangia, Spores Permanent Slides - T.S. of leaflet passing through sori, Prothallus: young &amp; mature with Antheridia, Archegonia and Sporophyte</p>
<p>5. <b>Phyllotaxy:</b> Alternate: Distichous - <i>Polyalthia</i>; Tristichous - <i>Cyperus</i>; Pentastichous - Shoeflower, Opposite: Superposed - <i>Quisqualis</i>; Decussate - <i>Calotropis</i>; Verticillate (Whorled) : <i>Nerium / Alstonia</i></p>
<p>6. <b>Stipules:</b> Free lateral - Shoeflower; Adnate - <i>Rosa</i>; Interpetiolar - <i>Ixora</i>; Intrapetiolar – <i>Gardenia</i>; Ochreate - <i>Polygonum</i>; Foliaceous - <i>Pisum</i>; Spinous – <i>Zizyphus, Acacia</i>; Tendillar - <i>Smilax</i>; Convolute (scaly) - <i>Ficus</i></p>
<p>7. <b>Venation:</b> Reticulate: Pinnate (Unicostate) - <i>Ficus</i>; Palmate (Multicostate) convergent - <i>Zizyphus</i>; Palmate (Multicostate) divergent - <i>Ricinus</i> Parallel: Pinnate (Unicostate) - <i>Canna</i>; Palmate (Multicostate) convergent - Maize; Palmate (Multicostate) divergent - Fan palm</p>
<p>8. <b>Incision:</b> Pinnatifid - Chrysanthemum; Pinnatipartite - <i>Argemone</i>; Pinnatisect - Marigold Palmatifid - Cotton; Palmatipartite - <i>Ricinus</i>; Palmatisect - <i>Ipomoea palmate</i></p>



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### 9. Simple leaf: Shoe flower

**Compound leaves:** Pinnate: Unipinnate - *Paripinnate* - *Cassia*; Imparipinnate - *Rosa*; Bipinnate - *Caesalpinia*; Tripinnate - *Moringa*; Decompound - *Coriander*, Palmate: Unifoliolate - *Citrus*; Bifoliolate - *Balanites*; Trifoliolate - *Aegle*; Multifoliolate (Digitate) - *Bombax*.

### 10. To study the following Economic important plant specimens / organ / product (fresh / preserved) with reference to its Botanical name, local name, family, useful part(s), Botanical characters, important chemical constituents and uses:

Cereals: Wheat and Maize;

Nuts: Cashewnut and

Almond;

Fruits: Banana and Mango;

Beverages: Tea and Coffee;

Pulses: Pea and Cajan pea;

Vegetables: Carrot and Potato;

Spices: Ginger and Clove;

Sugar-yielding Plants: Sugar cane and

Sugar beet





# KADI SARVA VISHWAVIDYALAYA

## Semester I

### PCH 101- Chemistry Practical (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire on hand basic understanding of the chemical world, its origin and structure to help the potential application of the unexplored and unidentified compounds in the industry. These practicals make the students capable and competent to work in chemistry related industries.

#### LEARNING OUTCOMES:

- Understand the concept of origin of chemistry.
- Develop an understanding of the chemical properties of compounds.
- Gain knowledge about the structure, function and applications of the chemicals compounds.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. General viva-voce will be conducted to analyze the knowledge of the student.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Practical Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
PCH- 101	Chemistry Practical- 1	4	2	4 (1 Day)	-	50	50

#### LIST OF EXPERIMENTS

##### 1. Inorganic Chemistry

###### Semi micro Analysis:-

- Cation analysis; separation and identification of ions from group I, II, III-A, III-B, IV, V-A, V-B.
- Anion analysis like Cl<sup>-</sup>, Br<sup>-</sup>, I<sup>-</sup>, NO<sub>3</sub><sup>-</sup>, NO<sub>2</sub><sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, SO<sub>3</sub><sup>2-</sup>, S<sup>2-</sup>, CO<sub>3</sub><sup>2-</sup>, CrO<sub>4</sub><sup>2-</sup> ( Water Soluble and insoluble).
- Candidate should perform the analysis of at least 10 compounds.

##### 2. Standardization

- 1) Preparation of standard solution of succinic acid and standardization of NaOH/KOH solution.
- 2) Preparation of standard solution of Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> and standardization of I<sub>2</sub> solution.
- 3) Preparation of standard solution of EDTA and estimation of Ca<sup>+2</sup>/Mg<sup>+2</sup> in CaCl<sub>2</sub>/MgCl<sub>2</sub> solution.
- 4) Preparation of standard solution of Oxalic acid and standardization of KMnO<sub>4</sub> solution.
- 5) Preparation of standard solution of K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> and standardization of FeSO<sub>4</sub> solution.

##### 3. Demonstrations

- Preparation of standard stock solution by w/v method and their different dilutions.
- Preparation of standard stock solution of HCl by v/v method and their different dilutions.



# KADI SARVA VISHWAVIDYALAYA

## **INSTRUCTION STRATEGIES**

1. Explanation of Principles, protocols, expected result trends, handling of instruments and equipments, precautions and safety measures in class and demonstration of important steps.
2. Monitoring of the students performing the experiments.
3. Evaluation of results of each experiment.



# KADI SARVA VISHWAVIDYALAYA

## Semester II

### PCH 201 – Chemistry Practical – II (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire on hand basic understanding of the chemical world, its origin and structure to help the potential application of the unexplored and unidentified compounds in the industry. These practicals make the students capable and competent to work in chemistry related industries.

#### LEARNING OUTCOMES:

- Understand the concept of origin of chemistry.
- Develop an understanding of the chemical properties of compounds.
- Gain knowledge about the structure, function and applications of the chemicals compounds.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. General viva-voce will be conducted to analyze the knowledge of the student.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
PCH- 201	Chemistry Practical II	4	2	4 (1 Day)	-	50	50

#### LIST OF EXPERIMENTS LIST OF EXPERIMENTS

##### 1. Organic Chemistry

- 1) Identification of an organic compound through the functional group analysis, Determination of melting point and boiling point, Preparation of suitable derivative.
- 2) Candidate should perform the analysis of at least 10 compounds.

##### List of compounds

###### ✓ Acids:

Benzoic acid, Cinnamic acid, Phthalic acid, Oxalic acid, Succinic acid.

###### ✓ Phenols:

$\alpha$ -Naphthol,  $\beta$ -Naphthol.

###### ✓ Bases:

p-Toludine, Diphenylamine, Aniline, Methyl aniline.

###### ✓ Neutrals:

Naphthalene, Anthracene, Acetamide, Benzamide, Acetanilide, m-Dinitrobenzene, Urea, Thiourea, Toluene, Acetone, Benzaldehyde, Methyl acetate, Ethyl acetate, Ethanol, 1-Propanol, Glycerol, Chloroform, Carbon tetrachloride, Chlorobenzene, Nitrobenzene.



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## 2. Volumetric Titrations

- 1) To determine the strength of NaOH and Na<sub>2</sub>CO<sub>3</sub> present in the solution mixture of NaOH & Na<sub>2</sub>CO<sub>3</sub> and to find out their percentage composition.
- 2) To determine the strength of NaHCO<sub>3</sub> and Na<sub>2</sub>CO<sub>3</sub> present in the solution mixture of NaHCO<sub>3</sub> & Na<sub>2</sub>CO<sub>3</sub> and to find out their percentage composition.
- 3) To determine the Normality, gram/liter and molarities of H<sub>2</sub>C<sub>2</sub>O<sub>4</sub>, 2H<sub>2</sub>O and H<sub>2</sub>SO<sub>4</sub> present in the solution mixture of H<sub>2</sub>C<sub>2</sub>O<sub>4</sub>, 2H<sub>2</sub>O & H<sub>2</sub>SO<sub>4</sub> by using X N NaOH and Y N KMnO<sub>4</sub> solutions.
- 4) To determine the Normality, gram/liter and molarity of H<sub>2</sub>C<sub>2</sub>O<sub>4</sub>, 2H<sub>2</sub>O and K<sub>2</sub>C<sub>2</sub>O<sub>4</sub> present in the solution mixture of H<sub>2</sub>C<sub>2</sub>O<sub>4</sub>, 2H<sub>2</sub>O & K<sub>2</sub>C<sub>2</sub>O<sub>4</sub> by using X N NaOH and Y N KMnO<sub>4</sub> solutions.
- 5) To determine the amount of Ca<sup>+2</sup> and Mg<sup>+2</sup> ion by EDTA solution from the mixture solution of CaCl<sub>2</sub> and MgCl<sub>2</sub>.

## 3. Demonstrations

- ✓ Melting point and Boiling point of an organic compound.
- ✓ Calibration of burette and Pipette.

## INSTRUCTION STRATEGIES

1. Explanation of Principles, protocols, expected result trends, handling of instruments and equipments, precautions and safety measures in class and demonstration of important steps.
2. Monitoring of the students performing the experiments.
3. Evaluation of results of each experiment.



# KADI SARVA VISHWAVIDYALAYA

## Semester – 1

### PMB 101 Microbiology Practical-I (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire on hand basic understanding of the microbiological world, its origin and structure to help the potential application of the unexplored and unidentified organisms in the industry. These practicals make the students capable and competent to work in Microbiology related industries.

#### **LEARNING OUTCOMES:**

- Understand the concept of origin of life, bacterial classification.
- Develop an understanding of the biodiversity and awareness of the microbes.
- Gain knowledge about the structure, function and applications of the bacterial cell.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. General viva-voce will be conducted to analyze the knowledge of the student.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Practical Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
PMB- 101	Microbiology Practicals – I	4	2	6 (1 Day)	-	50	50

#### **LIST OF EXPERIMENTS**

1. Principles and working knowledge of instruments like autoclave, pH meter, incubator, hot air oven, centrifuge, microscope and colony counter.
2. Staining techniques- Monochrome staining, Negative staining.
3. Differential Staining – Gram Staining
4. Special Staining Techniques- Cell wall, Capsule, Spore, Granules, Spirochete staining
5. Motility by hanging drop method and stab agar method.
6. Use of counting chamber for yeast Cell Counting
7. Measurement of microbial size by Micrometry
8. Study of permanent slides: Fungi, Protozoa, Algae

#### **REFERENCES:**

1. Experimental Microbiology – R.J.Patel
2. Laboratory excercises in Microbiology – Robert.A.Pollack
3. Laboratory excercises in Microbiology – Harley Prescott
4. Experimental Microbiology – Arora and Arora





# KADI SARVA VISHWAVIDYALAYA

## Semester – II

### PMB 201 MICROBIOLOGY PRACTICAL-II (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire basic understanding of the microbiological physiology and nutrition and its metabolic diversity.

#### **LEARNING OUTCOMES:**

- Understand the concept of nutrition of the bacteria.
- Develop an understanding of the growth and various parameters affecting to the growth.
- Gain knowledge about the microbial control and their inhibition..

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. General viva-voce will be conducted to analyze the knowledge of the student.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Practical Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
PMB- 201	Microbiology Practical-II	4	2	6 (1 Day)	-	50	50

#### **LIST OF EXPERIMENTS LIST OF EXPERIMENTS**

1. Preparation of solid and liquid culture media and their sterilization.
2. Growth of bacteria in liquid media
3. Isolation of microorganisms by various isolation method.-Streak, Spread, Pour plate
4. To study effect of U.V. light on Bacteria
5. To study effect of antibiotics on microbes
6. To study effect of chemicals on microbes
7. To study effect of temperature on bacterial growth.
8. To study effect of pH on bacterial growth.
9. To study effect of osmotic pressure (salt and sugar concentration) on bacterial growth.
10. To study oligodynamic action of heavy metals on bacterial growth.
11. Preservation of fungal and bacterial culture – use of mineral oils, use of slant, use of soil

#### **REFERENCES:**

1. Advances in Microbial Physiology – A. H .Rose
2. Applied Microbial Physiology - Rhodes
3. Bacterial Physiology and Metabolism – R.J.Sokath



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4. Experimental Microbiology – Arora and Arora
5. Bacterial Cell Structure – Rogers
6. Experimental Microbiology – R.J.Patel

## INSTRUCTION STRATEGIES

1. Explanation of Principles, protocols, expected result trends, handling of instruments and equipments, precautions and safety measures in class and demonstration of important steps.
2. Monitoring of the students performing the experiments.
3. Evaluation of results of each experiment.

## **PMB-201 B.Sc. Microbiology Semester- II,** **Practical Examination Skeleton**

**TIME : 10.00 TO 5.00 (One Day)                      TOTAL MARKS      50**

EX 1	Write the Principle and Working of Instrument	5
	A. Microscope	
	B. Autoclave	
	C. Hot Air oven	
	D. Incubator	
	E. Centrifuge	
	F. pH meter	
	G. Colorimeter	
EX 2	Perform the given exercise. Write principle, requirement and procedure.	15
	A. Isolation of bacteria by Streak/Spread/Pour plate method	
	B. Study the effect of Antibiotic on microbial Growth	
	C. Study the effect of heavy metal on microbial Growth	
	D. Study the effect of chemicals on microbial Growth	
EX 3	Perform the given exercise. Write principle, requirement and procedure	10
	A. Study the effect of pH on microbial Growth	
	B. Study the effect of temperature on microbial Growth	
	C. Study the effect of salt concentration on microbial Growth	
	D. Study the effect of U.V. light on microbial Growth	
	E. Preparation of media	
EX 4	Spotting	10
EX 5	Viva	5
EX6	Journal and Slide Box	5





# KADI SARVA VISHWAVIDYALAYA

## Semester I

### PPH 101 - Physics Practical I (W.E.F. June 2017)

**RATIONALE:** This course is designed to enable students to acquire on hand basic understanding of the physical phenomena, fundamental laws of physics, as well as on hand experience of handling the various instruments which have much use in industries as well as in research institutes. These experiments make the students capable and competent to work in physics related industries and research institutes.

#### **LEARNING OUTCOMES:**

- Understand the basic principles and of physics.
- Develop an understanding about the handling of various instruments.
- Develop an analytical attitude for physical laws through simple and basic experiments.
- Gain knowledge and expertise in experimental physics field.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. General viva-voce will be conducted to analyze the knowledge of the student.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Practical Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
PPH- 101	Physics practical –I	4	2	4 (1 Day)	-	50	50

#### **LIST OF EXPERIMENTS**

1. Damping coefficient, Relaxation and quality factor in the damped motion of a simple Pendulum.
2. Bar Pendulum: Determination of 'K' and 'g'
3. Study of Resonator.
4. Determination of the capacity 'c' of condenser.
5. Decay of Potential across condenser.
6. Verification of Thevenin's theorem.
7. Melde's Experiment.
8. Verification of Maximum power transfer theorem.
9. Momentum of Inertia of a Fly wheel.
10. Basic Logic Gates AND, OR , NOT
11. V-I characteristics of P-N Junction Diode
12. V-I characteristics of Zener Diode



# KADI SARVA VISHWAVIDYALAYA

## **NOTE:**

1. Minimum 8 experiments from the experiments mentioned in the list should be completed in first semester.
2. In experiments related to basic electronics, bread board based experiment should be preferred as per availability of resources.
3. Certified journal is must to be eligible to appear for the semester end practical examination.

## **INSTRUCTION STRATEGIES**

1. Explanation of Principles, protocols, expected result trends, handling of instruments and equipments, precautions and safety measures in class and demonstration of important steps.
2. Monitoring of the students performing the experiments.
3. Evaluation of results of each experiment.



# KADI SARVA VISHWAVIDYALAYA

## Semester II

### PPH 201 – Physics Practical- II (W.E.F June 2017)

**RATIONALE:** This course is designed to enable students to acquire on hand basic understanding of the physical phenomena, fundamental laws of physics, as well as on hand experience of handling the various instruments which have much use in industries as well as in research institutes. These experiments make the students capable and competent to work in physics related industries and research institutes

#### **LEARNING OUTCOMES:**

- Understand the basic principles and of physics.
- Develop an understanding about the handling of various instruments.
- Develop an analytical attitude for physical laws through simple and basic experiments.
- Gain knowledge and expertise in experimental physics field.

**TEACHING AND EVALUATION SCHEME:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. General viva-voce will be conducted to analyse the knowledge of the student.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Practical Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
PPH- 201	Physics Practical-II	4	2	4 (1 Day)	-	50	50

#### **LIST OF EXPERIMENTS LIST OF EXPERIMENTS**

1. Newton's rings: Determination of Radius of curvature of lens using sodium light.
2. Newton's rings: Determination of Wavelength of light.
3. Newton's rings: Determination of Refractive Index of Liquid.
4. Find out Refractive index of prism using spectrometer.
5. Calibration of Spectrometer for Parallel rays using Schuster's Method.
6. L-C-R circuit with AC Source: Study of the series resonance with frequency variation.
7. L-C-R circuit with AC Source: Study of the parallel resonance with frequency variation.
8. Study of line spectra.
9. To determine the ratio of magnetic moments of two magnets by using vibration magnetometer.
10. Determination of self-inductance 'L' of Inductor.
11. Study of Transformer.
12. P-N Junction diode as Half Wave Rectifier (i) Without filter (ii) With Series inductor Filter (iii) With Shunt Capacitor Filter. Calculation of percentage of regulation.



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13. P-N Junction diode as Full Wave Rectifier (i) Without filter (ii) With Series inductor Filter (iii) With Shunt Capacitor Filter. Calculation of percentage of regulation.
14. Bridge Rectifier (i) Without filter (ii) With Series inductor Filter (iii) With Shunt Capacitor Filter. Calculation of percentage of regulation.

## **NOTE:**

1. Minimum 8 experiments from the experiments mentioned in the list should be completed in first semester.
2. In experiments related to basic electronics, bread board based experiment should be preferred as per availability of resources.
3. Certified journal is must to be eligible to appear for the semester end practical examination.

## **INSTRUCTION STRATEGIES**

1. Explanation of Principles, protocols, expected result trends, handling of instruments and equipments, precautions and safety measures in class and demonstration of important steps.
2. Monitoring of the students performing the experiments.
3. Evaluation of results of each experiment.



# KADI SARVA VISHWAVIDYALAYA

## ELECTIVE

### SE 101- Environment Science (W.E.F. June 2017)

**Rationale of Study:** To learn about the area of environment science with selection of elective paper. This paper is designed to enable students to acquire basic understanding of the environment.

#### **Learning Outcomes:**

The students will learn about the basic concepts of environmental science.

#### **TEACHING & EVALUATION SCHEME:**

The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of their regular attendance in classroom & external (24 marks) university examination.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
ES-101	Environment Science	2	2	2	15	35	50

#### **COURSE CONTENT**

<b>Unit I</b>	<b>Number of lectures: 12</b> <b>Weightage: 50%</b>
<ul style="list-style-type: none"><li>• Definition, scope and basic principles of ecology and environment -2 Hrs.</li><li>• Natural Resources –Renewable and Non-renewable resources - 2 Hrs.</li><li>• Current environmental issues – climate change, Global warming, Acid rain, Ozone layer depletion – 4 Hrs.</li><li>• Pollution- Air, Water ,Soil , Marine , Thermal, Noise pollution- causes and effects – 4 Hrs.</li></ul>	



# KADI SARVA VISHWAVIDYALAYA

**Number of lectures: 12**

**Weightage: 50%**

## **Unit II**

- Ecosystem : Basic concepts, components of ecosystem. – 1 Hr.
- Trophic levels, food chains and food web – 1 Hr
- Ecological pyramids, ecosystem functions. – 2 Hrs.
- Energy flow in ecological systems, energy efficiencies – 2 Hrs.
- Biogeochemical Cycles: Importance, gaseous and sedimentary cycles. Carbon, Nitrogen, Phosphorus, hydrogen and Sulphur Cycles. – 6 Hrs.

## **References:**

1. Modi C D & others (2006) Paryavaran and Aapatti Vyavasthapan [Gujarati], Swami prakashan, Patan-384265
2. Patel J C (2006) Paryavaran and disaster management [Gujarati], Parshwa publication, Ahmedabad-380001
3. Erachs Bharucha (2008, first edition) Paryavaran Adhyayan [Gujarati], Orient Longman Pvt. Ltd., Hyderabad.
4. Distributor: M/S Himanshu book company, 06-07 Shri Jayendrapuri Bhavan, Ellisbridge, New Sanyas Ashram, Ahmedabad – 380 006.
5. K Ramana Murthi, 2004 Disaster Management, Dominant Publishers and Di stributors, New Delhi - 110002



# KADI SARVA VISHWAVIDYALAYA

## ELECTIVE

### SE-201 - Disaster Management (W.E.F June 2017)

**RATIONALE OF STUDY:** To learn about the area of environment science with selection of elective paper. This paper is designed to enable students to acquire basic understanding of the environment, environmental disasters and its management. It also provides information about mitigation methodology for the environmental disasters. It also gives information about psychological health and mental therapies and social awareness.

#### **LEARNING OUTCOMES:**

The students will learn about the basic concepts of disaster management.

#### **TEACHING & EVALUATION SCHEME:**

The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of their regular attendance in classroom & external (24 marks) university examination.

Subject Code	Subject Title	Teaching Scheme	Credits	Examination Scheme			Total Marks
		Theory Per Week		Hrs.	Max Marks		
					Mid Term	End Term	
SE-201	Disaster Management	2	2	2	15	35	50



# KADI SARVA VISHWAVIDYALAYA

## Course Content

### References:

1. Modi C D & others (2006) Paryavaran and Aapatti Vyavasthapan [Gujarati], Swami prakashan, Patan-384265
2. Patel J C (2006) Paryavaran and disaster management [Gujarati], Parshwa publication, Ahmedabad-380001
3. Erachs Bharucha (2008, first edition) Paryavaran Adhyayan [Gujarati], Orient Longman Pvt. Ltd., Hyderabad.
4. Distributor: M/S Himanshu book company, 06-07 Shri Jayendrapuri Bhavan, Ellisbridge, New Sanyas Ashram, Ahmedabad – 380 006.
5. K Ramana Murthi, 2004 Disaster Management, Dominant Publishers and Di stributors, New Delhi - 110002

### Unit I

**Number of lectures: 12**

**Weightage: 50%**

- Introduction disaster: Understanding the concepts and definitions of Disaster-2 hrs
- General concepts of disaster: Hazard, Vulnerability, Risk-4 hrs
- Introduction, Primary concept, approaches to disaster risk reduction for disaster management-3 hrs
- Various steps during pre disaster management: Risk Assessment and Analysis-3 hrs

### Unit II

**Number of lectures: 12**

**Weightage: 50%**

- Management during disaster and post disaster: Types, Trends, Causes, Consequences and Control of Geological Disasters (earthquakes, landslides, tsunami); Hydro Disasters (floods); biological disaster (forest fire); technical disaster (chemical, nuclear); global disasters trends (climate change and urban disasters)-12 hrs