

**B.Tech. (Cosmetics)
Semester-I & II
Examination**

Prospectus No.20131910

**संत गाडगे बाबा अमरावती विद्यापीठ
SANT GADGE BABA AMRAVATI UNIVERSITY**

**गृहविज्ञान विद्याशाखा
(FACULTY OF HOME SCIENCE)**

**PROSPECTUS
OF
B.Tech (Cosmetics)
Semester-I, Winter-2012
Semester-II, Summer-2013
Examinations
(Eight Semester Degree Course)**



2012

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SANT GADGE BABA AMRAVATI UNIVERSITY**SPECIAL NOTE FOR INFORMATION OF THE STUDENTS**

- (1) Notwithstanding anything to the contrary, it is notified for general information and guidance of all concerned that a person, who has passed the qualifying examination and is eligible for admission only to the corresponding next higher examination as an ex-student or an external candidate, shall be examined in accordance with the syllabus of such next higher examination in force at the time of such examination in such subjects papers or combination of papers in which students from University Departments or Colleges are to be examined by the University.
- (2) Be it known to all the students desirous to take examination/s for which this prospectus has been prescribed should, if found necessary for any other information regarding examinations etc., refer the University Ordinance Booklet the various conditions/provisions pertaining to examination as prescribed in the following Ordinances.

- Ordinance No. 1 : Enrolment of Students.
- Ordinance No. 2 : Admission of Students
- Ordinance No. 4 : National cadet corps
- Ordinance No. 6 : Examinations in General (relevent extracts)
- Ordinance No. 18/2001 : An Ordinance to provide grace marks for passing in a Head of passing and Improvement of Division (Higher Class) and getting Distinction in the subject and condonation of defficiency of marks in a subject in all the faculties prescribed by the Statute No.18, Ordinance 2001.
- Ordinance No. 9 : Conduct of Examinations (relevent extracts)
- Ordinance No. 10 : Providing for Exemptions and Compartments
- Ordinance No. 19 : Admission of Candidates to Degrees.

- Ordinance No. 109 : Recording of a change of name of a University student in the records of the University.
- Ordinance No. 6 of 2008 : For improvement of Division/Grade.
- Ordinance No.19/2001 : An Ordinance for Central Assessment Programme, Scheme of Evaluation and Moderation of answerbooks and preparation of results of the examinations, conducted by the University, Ordinance 2001.

Dineshkumar Joshi
Registrar
Sant Gadge Baba Amravati University

DIRECTION

No. : 27 / 2012

Dated :- 29.6.2012

Subject : Examinations Leading to the Degree of Bachelor of Technology (Cosmetics) in the Faculty of Home Science (Eight Semester – Credit Grade Based System Course) Direction, 2012

Whereas, the Degree of Bachelor of Technology (Cosmetics) in the Faculty of Home Science is in existence in the University under Ordinance No.15 of 1998 and Regulation No.43 of 1998 respectively as per annual pattern.

AND

Whereas, the Academic Council in its meeting held on 5.5.2012 while considering item No.53 (3) A) R-1 has resolved to accept the Draft Schemes of Teaching and Examinations, Draft Syllabus and Draft Ordinances for B.Tech. (Cosmetics) alongwith other details as per semester system and credit grade based system, and further resolved to refer the Draft Scheme of Teaching and Examination and Draft Ordinances to the Ordinance Committee for making Ordinances and Regulations.

AND

Whereas, the Hon'ble Vice-Chancellor has accepted the corrections recommended by Chairman, Ad-hoc Committee in Cos.Tech. & Dean, faculty of Home Science u/s 14(7) of the Maharashtra Universities Act, 1994 on 25.6.2012 on behalf of the authorities of the University.

AND

Whereas, it is necessary to frame an Ordinance/Regulation for B.Tech. (Cosmetics) as per semester pattern and credit grade system.

AND

Whereas, the making of Ordinance/Regulation for B.Tech.(Cosmetics) Semester-I to VIII as per semester pattern and credit grade system, is a time consuming process.

AND

Whereas, the Academic Session is commencing from June 2012 and it is necessary to provide the Schemes of examinations, eligibility criteria along with other details for admission of students in the above pattern.

Now, therefore, I, Dr. Mohan K.Khedkar, Vice Chancellor of Sant Gadge Baba Amravati University, in exercise of powers conferred upon me under sub-section (8) of section 14 of the Maharashtra Universities Act., 1994, do hereby direct as under:

- 1) This Direction may be called "Examinations Leading to the Degree of Bachelor of Technology (Cosmetics) in the Faculty of Home Science (Eight Semester – Credit Grade Based System Course) Direction, 2012".
- 2) This direction shall come into force from the date of its issuance.
- 3) (a) The following shall be the examinations leading to the Degree of Bachelor of Technology (Cosmetics) in the faculty of Home science.

1.	Bachelor of Technology	Semester-I
2.	Bachelor of Technology	Semester-II
3.	Bachelor of Technology	Semester-III
4.	Bachelor of Technology	Semester-IV
5.	Bachelor of Technology	Semester-V
6.	Bachelor of Technology	Semester-VI
7.	Bachelor of Technology	Semester - VII
8.	Bachelor of Technology	Semester-VIII
- (b) The duration of the Degree Course under this Direction shall be of Eight Semester in four academic years (i.e. two semester per year)
 - 1) B.Tech I & II Semester in First Academic Year
 - 2) B.Tech III & IV Semester in Second Academic Year
 - 3) B.Tech V & VI Semester in Third Academic Year
 - 4) B.Tech VII & VIII Semester in Fourth Academic Year
- (c) The examination specified in the preceding paragraph shall be held twice a year at such places and on such dates as may be appointed by the Board of Examinations.
- 4) Supplementary examinations shall be held for all semesters of B.Tech.(Cosmetics)
- 5) Subject to her/his compliance with the provisions of this Direction and other ordinance in force from time to time, a candidate for admission :-
 - a) To the Bachelor of Technology, Ist Semester Examination, shall have passed twelfth standard examinations of Maharashtra State Board of Secondary & Higher Secondary Education or examination recognised as equivalent thereto with the subjects English, Physics, Chemistry, Biology or Maths or Diploma in Pharmacy.

- 6) Subject to his/her compliance with the provisions of this Direction & other Ordinances pertaining to Examination in force from time to time, the applicant for admission, at the end of the course of study of a particular semester/session, to an Examination specified in column (1) of the table below, shall be eligible to appear if-
- he/she satisfies with the conditions in the table and the provisions thereunder.
 - he/she complies with the provisions of the ordinance pertaining to the Examination in general from time to time.
 - he/she has prosecuted a regular course of study in a college affiliated to the University.
 - he/she has in the opinion of the Principal shown satisfactory progress in his/her studies.

TABLE

Name of the Exam.	The student should have passed the exam. of	The student should have satisfactorily completed the following session/ semester	The student should have passed the following examination
B. Tech. Semester-I	As mentioned in Para 5(a)	—	—
B. Tech. Semester-II	—	B.Tech. Semester-I	—
B. Tech. Semester-III	—	B.Tech. Semester-II	2/3 rd Heads of I & II Semester combined together
B. Tech. Semester-IV	—	B.Tech. Semester-III	-do-
B. Tech. Semester-V	B.Tech.I & II Semester	B.Tech. Semester-IV	2/3 rd Heads of III & IV Semester combined together
B. Tech. Semester-VI	—	B.Tech. Semester-V	-do-
B. Tech. Semester-VII	B.Tech. III & IV Semester	B.Tech. Semester-VI	2/3 rd Heads of V & VI Semester combined together
B. Tech. Semester-VIII	—	B. Tech. Semester-VII	-do-

Explanation :

- While calculating 2/3rd heads of passing, fraction if any shall be ignored
 - For considering the heads of passing, every theory and every practical shall be considered as separate head of passing.
 - An examinee who has passed 2/3rd heads of passing shall be allowed to keep term in the next higher class.”
- Without prejudice to the other provision of the Ordinance No. 6 relating to the Examination in General, the provisions of paragraph 5,7,8,10 and 31 of the said ordinance shall apply to every college candidate.
 - The fees for the examinations shall be as prescribed by the Management Council from time to time whenever any change is made in the fees prescribed for any particular examination that shall be notified through a notification for information of the examinees concerned.
 - (i) The scope of the subjects shall be as indicated in the respective syllabus in force from time to time.
(ii) Medium of instruction and examination shall be English.
 - The schemes of teaching & credit system, scheme of examination along with other details & features of credit system shall be as given in **Appendices-I to V**.
 - There shall be no classification of examinees successful at the I to VII semester examination.
 - Incentive marks for each semester of B.Tech. examinations shall be as per Ordinance no.1 of 1985 in respect of Ordinance to provide for incentive marks for NSS, NCC, games & sports & other extra-curricular activities.
 - Every student has to undergo Industrial Training for one month after Sixth Semester in any Cosmetic Industry which shall be essential for fulfilment of Degree course.
 - Provision of Ordinance No.18 of 2001 relating to the condonation of Deficiency of marks for passing an Examination and of Ordinance No. 10 relating to Exemptions and Compartments as amended up to date shall apply to the Examinations under this Direction.
 - Cummulative Grade Point Average shall be calculated on the basis of performance of a candidate from Semester-V to VIII.
 - As soon as possible after the examinations, the Board of Examinations shall publish a list of successful examinees and the Merit list shall be prepared as per provision of Ordinance No.6.

- 17) Notwithstanding anything to the contrary in this Direction no person shall be admitted to this examination, if he/she has already passed the same examination or an equivalent examination of other statutory University.
- 18) Successful examinees at the I,II,III,IV, V,VI,VII & VIII semester examination shall be entitled to receive a certificate signed by the Registrar and successful Examinees at the VIII semester examination shall on payment of the prescribed fees receive a Degree in the prescribed form signed by the Hon'ble Vice-Chancellor.

Amravati
Dated : 28/06/2012

Sd/-
(Dr. M.K. Khedkar)
Vice-Chancellor

Appendix-I
Draft Scheme of teaching & Credit System for B.Tech (Semester wise)
First to Eight Semester

Sub. Code	Subject	Scheme of teaching & Credit System	
		Theory (Credits)	Practical (Credits)
Semester-I			
1.1	Cosmetic Technology I	03 (03)	03 (1.5)
1.2	Cosmetic Chemistry I	03 (03)	03 (1.5)
1.3	Herbal Cosmetics I	03 (03)	03 (1.5)
1.4	Dermatology I	03 (03)	03 (1.5)
1.5	Computer Application	03 (03)	1 hr. demo
1.6	Mathematics & Statistics-I	03 (03)	—
	Total	18 (18)	12 (06)
Semester-II			
2.1	Cosmetic Technology II	03 (03)	03 (1.5)
2.2	Cosmetic Chemistry II	03 (03)	03 (1.5)
2.3	Herbal Cosmetics II	03 (03)	03 (1.5)
2.4	Dermatology II	03 (03)	03 (1.5)
2.5	Perfume & Colours I	03 (03)	03 (1.5)
2.6	Mathematics & Statistics-II	03 (03)	—
	Total	18 (18)	15 (7.5)
Semester-III			
3.1	Cosmetic Technology III	03 (03)	03 (1.5)
3.2	Cosmetic Chemistry III	03 (03)	03 (1.5)
3.3	Beauty Culture & Clinical Cosmetic-I	03 (03)	03 (1.5)
3.4	Perfume & Colours II	03 (03)	03 (1.5)
3.5	Cosmetic Engineering-I	03 (03)	03 (1.5)
3.6	Dermatology III	03 (03)	—
	Total	18 (18)	15 (7.5)
Semester-IV			
4.1	Cosmetic Technology IV	03 (03)	03 (1.5)
4.2	Cosmetic Chemistry IV	03 (03)	03 (1.5)
4.3	Beauty Culture & Clinical Cosmetic-II	03 (03)	03 (1.5)
4.4	Cosmetic Analysis I	03 (03)	03 (1.5)
4.5	Cosmetic Engineering II	03 (03)	03 (1.5)
4.6	Dermatology IV	03 (03)	—
	Total	18 (18)	15 (7.5)

Semester-V			
5.1	Cosmetic Technology V	03 (03)	03 (1.5)
5.2	Perfume & Colour III	03 (03)	03 (1.5)
5.3	Herbal Cosmetics III	03 (03)	03 (1.5)
5.4	Physical Cosmetics I	03 (03)	03 (1.5)
5.5	Cosmetic Analysis-II	03 (03)	03 (1.5)
5.6	Cosmetic Management -I	03 (03)	—
	Total	18 (18)	15 (7.5)
Semester-VI			
6.1	Cosmetic Technology VI	03 (03)	03 (1.5)
6.2	Perfume & Colour IV	03 (03)	03 (1.5)
6.3	Herbal Cosmetics IV	03 (03)	03 (1.5)
6.4	Physical Cosmetics II	03 (03)	03 (1.5)
6.5	Cosmetic Analysis III	03 (03)	03 (1.5)
6.6	Cosmetic Management II	03 (03)	—
	Total	18 (18)	15 (7.5)
Semester-VII			
7.1	Cosmetic Technology VII	03 (03)	03 (1.5)
7.2	Perfume & Colour V	03 (03)	03 (1.5)
7.3	Herbal Cosmetics V	03 (03)	03 (1.5)
7.4	Cosmetic Analysis IV	03 (03)	03 (1.5)
7.5	Cosmetic Engineering-III	03 (03)	03 (1.5)
7.6	Seminar	—	03 (1.5)
	Total	15 (15)	18 (9)
Semester-VIII			
8.1	Cosmetic Technology VIII	03 (03)	03 (1.5)
8.2	Perfume & Colour VI	03 (03)	03 (1.5)
8.3	Herbal Cosmetics VI	03 (03)	03 (1.5)
8.4	Cosmetic Jurisprudence	03 (03)	—
8.5	Cosmetic Engineering-IV	03 (03)	03 (1.5)
8.6	Project	—	03 (1.5)
	Total	15 (15)	15 (7.5)

Appendix-II
Scheme of Examination for B. Tech. (Semester wise)
First to Eight semester

Sub. Code	Subject	Scheme of Examination						Minimum Marks for passing		Total Marks in theory/ practical
		Theory		Practical		Theory Int. Marks	Pract. Int. Marks	Theory	Pract.	
		Hrs	Marks	Hrs	Marks					
Semester-I										
1.1	Cosmetic I Technology	03	60	04	50	20	30	36	40	80+80
1.2	Cosmetic Chemistry I	03	60	04	50	20	30	36	40	80+80
1.3	Herbal Cosmetics I	03	60	04	50	20	30	36	40	80+80
1.4	Dermatology I	03	60	04	50	20	30	36	40	80+80
1.5	Computer Application	03	60	-	-	20	-	36	-	80
1.6	Mathematics & Statistics-I	03	60	-	-	20	-	36	-	80
Total Marks for the semester										800
Semester-II										
2.1	Cosmetic Technology II	03	60	04	50	20	30	36	40	80+80
2.2	Cosmetic Chemistry II	03	60	04	50	20	30	36	40	80+80
2.3	Herbal Cosmetics II	03	60	04	50	20	30	36	40	80+80
2.4	Dermatology II	03	60	04	50	20	30	36	40	80+80
2.5	Perfume & Colours I	03	60	04	50	20	30	36	40	80+80
2.6	Mathematics & Statistics-II	03	60	-	-	20	-	36	-	80
Total Marks for the semester										880
Semester-III										
3.1	Cosmetic Technology III	03	60	04	50	20	30	36	40	80+80
3.2	Cosmetic Chemistry III	03	60	04	50	20	30	36	40	80+80
3.3	Beauty Culture & Clinical Cosmetic-I	03	60	04	50	20	30	36	40	80+80
3.4	Perfume & Colours II	03	60	04	50	20	30	36	40	80+80
3.5	Cosmetic Engineering-I	03	60	04	50	20	30	36	40	80+80
3.6	Dermatology-III	03	60	-	-	20	-	36	-	80
Total Marks for the semester										880

Semester-IV										
4.1	Cosmetic Technology IV	03	60	04	50	20	30	36	40	80+80
4.2	Cosmetic Chemistry IV	03	60	04	50	20	30	36	40	80+80
4.3	Beauty Culture & Clinical Cosmetic-II	03	60	04	50	20	30	36	40	80+80
4.4	Cosmetic Analysis I	03	60	04	50	20	30	36	40	80+80
4.5	Cosmetic Engineering-II	03	60	04	50	20	30	36	40	80+80
4.6	Dermatology-IV	03	60	-	-	20	-	36	-	80
Total Marks for the semester										880
Semester-V										
5.1	Cosmetic Technology V	03	60	04	50	20	30	36	40	80+80
5.2	Perfume & Colour III	03	60	04	50	20	30	36	40	80+80
5.3	Herbal Cosmetics III	03	60	04	50	20	30	36	40	80+80
5.4	Physical Cosmetics I	03	60	04	50	20	30	36	40	80+80
5.5	Cosmetic Analysis II	03	60	04	50	20	30	36	40	80+80
5.6	Cosmetic Management I	03	60	-	-	20	-	36	-	80
Total Marks for the semester										880
Semester-VI										
6.1	Cosmetic Technology VI	03	60	04	50	20	30	36	40	80+80
6.2	Perfume & Colour IV	03	60	04	50	20	30	36	40	80+80
6.3	Herbal Cosmetics IV	03	60	04	50	20	30	36	40	80+80
6.4	Physical Cosmetics II	03	60	04	50	20	30	36	40	80+80
6.5	Cosmetic Analysis III	03	60	04	50	20	30	36	40	80+80
6.6	Cosmetic Management II	03	60	-	-	20	-	36	-	80
Total Marks for the semester										880
Semester-VII										
7.1	Cosmetic Technology-VII	03	60	04	50	20	30	36	40	80+80
7.2	Perfume & Colour V	03	60	04	50	20	30	36	40	80+80
7.3	Herbal Cosmetics V	03	60	04	50	20	30	36	40	80+80
7.4	Cosmetic Analysis IV	03	60	04	50	20	30	36	40	80+80
7.5	Cosmetic Engineering-III	03	60	04	50	20	30	36	40	80+80
7.6	Seminar	-	-	-	-	-	80	-	40	80
Total Marks for the semester										880

Semester-VIII										
8.1	Cosmetic Technology VIII	03	60	04	50	20	30	36	40	80+80
8.2	Perfume & Colour VI	03	60	04	50	20	30	36	40	80+80
8.3	Herbal Cosmetics VI	03	60	04	50	20	30	36	40	80+80
8.4	Cosmetic Jurisprudence	03	60	-	-	20	-	36	-	80
8.5	Cosmetic Engineering-IV	03	60	04	50	20	30	36	40	80+80
8.6	Project	-	-	-	-	-	80	-	40	80
Total Marks for the semester										800

Seminar :-

The topic for the seminar shall be assigned to him/her by the faculty members of Seventh semester & topic should be decided from the syllabus of same semester, with immediate from the date of the commencement of the seventh semester. Evaluation of seminar shall be based on the communication, representation and skill in oral presentation.

Project Report :-

“The topic for the project shall be based on the practical work / theoretical/review oriented any topic from current Pharmaceutical development and shall be assigned to him/her by the respective guide from faculty members immediate from the date of the commencement of the sixth semester. Report to be submitted in the institute and examination (seminars on the project report) shall be conducted at the college level. Examination/ Evaluation of the project shall be based on Introduction and information retrieval systems, Organization of material and references in the project report, Representation, Skill in oral presentation, Questioning and defending, and finally on the report.

Appendix – III**Scheme of Marks and Credits subject wise for B.Tech. (Semester wise) First to Eight Semester****Semester-I**

Subject Code	Subject	Maximum Marks (Credits)		Total Marks (Credits)
		Theory	Practical	
1.1	Cosmetic Technology I	80 (03)	80(1.5)	160 (4.5)
1.2	Cosmetic Chemistry I	80 (03)	80(1.5)	160 (4.5)
1.3	Herbal Cosmetics I	80 (03)	80(1.5)	160 (4.5)
1.4	Dermatology I	80 (03)	80(1.5)	160 (4.5)
1.5	Computer Application	80 (03)	-	80 (03)
1.6	Mathematics & Statistics-I	80 (03)	-	80 (03)
Total				800 (24)

Semester-II

Subject Code	Subject	Maximum Marks (Credits)		Total Marks (Credits)
		Theory	Practical	
2.1	Cosmetic Technology II	80 (03)	80(1.5)	160 (4.5)
2.2	Cosmetic Chemistry II	80 (03)	80(1.5)	160 (4.5)
2.3	Herbal Cosmetics II	80 (03)	80(1.5)	160 (4.5)
2.4	Dermatology II	80 (03)	80(1.5)	160 (4.5)
2.5	Perfume & Colours I	80 (03)	80(1.5)	160 (4.5)
2.6	Mathematics & Statistics-II	80 (03)	-	80 (03)
Total				880 (25.5)

Semester-III

Subject Code	Subject	Maximum Marks (Credits)		Total Marks (Credits)
		Theory	Practical	
3.1	Cosmetic Technology III	80 (03)	80(1.5)	160 (4.5)
3.2	Cosmetic Chemistry III	80 (03)	80(1.5)	160 (4.5)
3.3	Beauty Culture & Clinical Cosmetic-I	80 (03)	80(1.5)	160 (4.5)
3.4	Perfume & Colours II	80 (03)	80(1.5)	160 (4.5)
3.5	Cosmetic Engineering-I	80 (03)	80(1.5)	160 (4.5)
3.6	Dermatology III	80 (03)	-	80 (03)
Total				880 (25.5)

Semester-IV

Subject Code	Subject	Maximum Marks (Credits)		Total Marks (Credits)
		Theory	Practical	
4.1	Cosmetic Technology IV	80 (03)	80(1.5)	160 (4.5)
4.2	Cosmetic Chemistry IV	80 (03)	80(1.5)	160 (4.5)
4.3	Beauty Culture & Clinical Cosmetic-II	80 (03)	80(1.5)	160 (4.5)
4.4	Cosmetic Analysis I	80 (03)	80(1.5)	160 (4.5)
4.5	Cosmetic Engineering-II	80 (03)	80(1.5)	160 (4.5)
4.6	Dermatology IV	80 (03)	-	80 (03)
Total				880 (25.5)

Semester-V

Subject Code	Subject	Maximum Marks (Credits)		Total Marks (Credits)
		Theory	Practical	
5.1	Cosmetic Technology V	80 (03)	80(1.5)	160 (4.5)
5.2	Perfume & Colour III	80 (03)	80(1.5)	160 (4.5)
5.3	Herbal Cosmetics III	80 (03)	80(1.5)	160 (4.5)
5.4	Physical Cosmetics I	80 (03)	80(1.5)	160 (4.5)
5.5	Cosmetic Analysis II	80 (03)	80(1.5)	160 (4.5)
5.6	Cosmetic Management -I	80 (03)	-	80 (03)
Total				880 (25.5)

Semester-VI

Subject Code	Subject	Maximum Marks (Credits)		Total Marks (Credits)
		Theory	Practical	
6.1	Cosmetic Technology VI	80 (03)	80(1.5)	160 (4.5)
6.2	Perfume & Colour IV	80 (03)	80(1.5)	160 (4.5)
6.3	Herbal Cosmetics IV	80 (03)	80(1.5)	160 (4.5)
6.4	Physical Cosmetics II	80 (03)	80(1.5)	160 (4.5)
6.5	Cosmetic Analysis III	80 (03)	80(1.5)	160 (4.5)
6.6	Cosmetic Management II	80 (03)	-	80 (03)
Total				880 (25.5)

Semester-VII

Subject Code	Subject	Maximum Marks (Credits)		Total Marks (Credits)
		Theory	Practical	
7.1	Cosmetic Technology VII	80 (03)	80(1.5)	160 (4.5)
7.2	Perfume & Colour V	80 (03)	80(1.5)	160 (4.5)
7.3	Herbal Cosmetics V	80 (03)	80(1.5)	160 (4.5)
7.4	Cosmetic Analysis IV	80 (03)	80(1.5)	160 (4.5)
7.5	Cosmetic Engineering-III	80 (03)	80(1.5)	160 (4.5)
7.6	Seminar	—	80(1.5) (Internal)	80 (1.5)
Total				880 (24)

Semester-VIII

Subject Code	Subject	Maximum Marks (Credits)		Total Marks (Credits)
		Theory	Practical	
8.1	Cosmetic Technology VIII	80 (03)	80(1.5)	160 (4.5)
8.2	Perfume & Colour VI	80 (03)	80(1.5)	160 (4.5)
8.3	Herbal Cosmetics VI	80 (03)	80(1.5)	160 (4.5)
8.4	Cosmetic Jurisprudence	80 (03)	-	80 (3)
8.5	Cosmetic Engineering-IV	80 (03)	80(1.5)	160 (4.5)
8.6	Project	-	80(1.5)	80 (1.5)
Total				800(22.5)

Appendix – IV
Distribution of Total Marks / Credits Semester wise

Year	Semester	Total Marks/Credits
First Year	Semester I	800 (24)
	Semester II	880 (25.5)
Second Year	Semester III	880 (25.5)
	Semester IV	880 (25.5)
Third Year	Semester V	880 (25.5)
	Semester VI	880 (25.5)
Fourth Year	Semester VII	880 (24)
	Semester VIII	800 (22.5)
Total Marks / Credits		6880 (Credits = 198)

Appendix-V

Sant Gadge Baba Amravati University, Amravati

B.Tech. Syllabus

Credit-grade based performance and assessment system (CGPA)

Features of the Credit System

- Degree course would be of total 198 credits.
- 3 credit course of theory will be of three clock hours per week running for 12 weeks.
- 1.5 credit courses of practical will consist of three hours of laboratory exercise for 12 weeks.

FIRST YEAR MAY DIVIDE INTO TOTAL TWO SEMESTERS (SEMESTER-I AND SEMESTER-II) AND SHALL HAVE TOTAL 12 THEORY COURSES, 09 PRACTICAL COURSE.

- 12 Theory Course x 3 credits = 36 credits
- 09 Laboratory courses x 1.5 credits = 13.5 credits

Total = 49.5 credits

SECOND YEAR MAY DIVIDE INTO TOTAL TWO SEMESTERS (SEMESTER-III AND SEMESTER-IV) AND SHALL HAVE TOTAL 12 THEORY COURSES, 10 PRACTICAL COURSE.

- 12 Theory Course x 3 credits = 36 credits
- 10 Laboratory courses x 1.5 credits = 15 credits

Total = 51 credits

THIRD YEAR MAY DIVIDE INTO TOTAL TWO SEMESTERS (SEMESTER-V AND SEMESTER-VI) AND SHALL HAVE TOTAL 12 THEORY COURSES, 10 PRACTICAL COURSES.

- 12 Theory Course x 3 credits = 36 credits
- 10 Laboratory courses x 1.5 credits = 15 credits

Total = 51 credits

FOURTH YEAR MAY DIVIDE INTO TOTAL TWO SEMESTERS (SEMESTER-VII AND SEMESTER-VIII) AND SHALL HAVE TOTAL 10 THEORY COURSES, 08 PRACTICAL COURSE, 1 SEMINAR & 1 Project.

- 10 Theory Course x 3 credits = 30 credits
- 09 Laboratory courses x 1.5 credits = 13.5 credits
- 01 Seminar x 1.5 credits = 1.5 credits
- 01 Project x 1.5 credits = 1.5 credits

Total = 46.5 credits

EVERY STUDENTS SHALL COMPLETE 198 CREDITS IN EIGHT SEMESTERS.

First year have two semesters and will consist of 49.5 credits. Second year have two semesters and will consist of 51 credits. Third year have two semesters and will consist of 51 credits. Fourth year have two semesters and will consist of 46.5 credits.

- First year (Semester—I & II) = 49.5 credits
- Second year (Semester-III & IV) = 51 credits
- Third year (Semester-V & VI) = 51 credits
- Fourth year (Semester-VII & VIII) = 46.5 credits

Eight semesters total credits = 198 credits

SCHEME OF SYLLABUS AND CREDIT SYSTEM :

- 1) One credit is equal to one theory hour therefore three credits will be for each theory subject & one credit is equal to two practical hours therefore for each practical subject there will be 1.5 credits.
- 2) Academic calendar showing dates of commencement and end of teaching, internal assessment tests and term end examination shall be duly notified before commencement of each semester every year by the College.
- 3) Credit system offers more options to students and has more flexibility.
- 4) Students can get requisite credits from the concerned college where

he is mutually permitted on terms mutually agreed to complete the same and be eligible to appear for term end examination.

- 5) Seminar and the project shall be compulsory to each student at the end semester of VIIth and VIIIth Semester.
- 6) Paper setting and assessment for a particular course would be the responsibility of the course In-charge.
- 7) A student who passes the internal tests but fails in Term End Examination of a course shall be given FF grade.
- 8) Student with FF grade in a course would be granted credit for that course but not the grade for that course and shall have to clear the concerned course.
- 9) The evaluation is based on average weightage system. Every subject has credit point based system. Every student is awarded grade point out of maximum 10 points in each subject (based on 10 point scale).
- 10) Grades-Marks for each course would be converted to grades as shown in following Table 1 for theory and table 2 for practical.

Table 1: Final Grade point for Theory

Final grade	Range of Marks obtained out of 100 or equivalent fraction	Grade point
AA	90-100	10
AB	80-89	9
BB	70-79	8
BC	60-69	7
CC	55-59	6
CD	45-54	5
FF	Below 45	0
ZZ	Absent in Examination	

Table 2: Final Grade point for Practical

Final grade	Range of Marks obtained out of 100 or equivalent fraction	Grade point
AA	90-100	10
AB	80-89	9
BB	70-79	8
BC	60-69	7
CC	55-59	6
CD	50-54	5
FF	Below 50	0
ZZ	Absent in Examination	

- 11) Equivalence of the conventional division/class with the CGPA in final semester is in accordance with the following table 3 and Grade Points for SGPA and CGPA of B.Tech. Table-4.

Table-3: Equivalence of Class/Division to CGPA

Sr.No.	CGPA	Class/Division
1.	7.5 or more than 7.5	First Class with Distinction
2.	6.00 or more but less than or equal to 7.49	First Class
3.	5.50 or more but less than or equal to 5.99	Higher Second Class
4.	5.00 or more but less than or equal to 5.49	Second Class

Table-4 : Grade Points for SGPA and CGPA of B. Tech.

Grade Point	Final Grade
9 - 10	AA
8 - 8.99	AB
7 - 7.99	BB
6 - 6.99	BC
5.5 - 5.99	CC
4.5 - 5.49	CD
0 - 4.49	FF
Absent in Examination	ZZ

- 12) Based on the grade point obtained in each subject, Semester Grade Point Average (SGPA) and then Cumulative Grade Point Average (CGPA) are computed as follows.

13) Computation of SGPA and CGPA

Every student is awarded point out of maximum out of 10 point in each subject (Based on 10 point scale). Based on the Grade point obtained in subject the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) are computed. The computation of SGPA and CGPA is as under.

Semester Grade Point Average (SGPA) is the weightage average of point obtained by a student in a semester and computed as follows.

$$SGPA = \frac{U_1 \times M_1 + U_2 \times M_2 + \dots + U_n \times M_n}{U_1 + U_2 + \dots + U_n}$$

Where U1, U2,..... are subject credit of the respective course and M1, M2,..... are the Grade point obtained in the respective subject (out of 10).

The Semester Grade Point Average (SGPA) for all the four semester is also mentioned at the end of every semester.

The Cumulative Point Average (CGPA) is used to describe the overall performance of a student in the course and is computed as under. CGPA shall be calculated on semester V, VI, VII & VIII.

$$CGPA = \frac{\sum_{n=5}^{n=8} SGPA(n)C(n)}{\sum_{n=5}^{n=8} C(n)}$$

Where SGPA (n) is the nth semester SGPA of the student and C_n is the nth semester total credit. The SGPA and CGPA are rounded off to the second place of decimal.

- 14) Degree will be awarded on the basis of the performance of credits from the Semester-V to VIII.

ACADEMIC CALENDAR AND TERMS

The terms and academic activities of the Sant Gadge Baba Amravati University under CGPA shall be as per the dates given below, only the years shall be changed i.e. the dates shall remain same as given below irrespective of the year.

Beginning of First Term	:	As per University academic calendar (Semester I, III, V and VII)
Beginning of Second Term	:	As per University academic calendar (Semester II, IV, VI and VIII)
Vacation	:	As per University academic calendar

Syllabus Prescribed for B.Tech (Cosmetic) Ist Semester Examination (Implemented from the Academic Session 2012-13)

1.1 Cosmetic Technology-I

Theory

- 1) **Introduction of Cosmetics** : Purposes of Cosmetics meaning of Cosmetics and cosmeceuticals. Classification of Cosmetics Quality characteristics and Quality Assurance Development Process of Cosmetics. Scientific background technology and its future.
- 2) **Excipients & its applications in cosmetics.**
 - a. **Oily Materials** : Introduction, Oils and Fats, Wax, Hydrocarbons, Higher Fatty Acids, Higher Alcohols, Esters, Silicones.
 - b. **Surface Active Agents** : Introduction Anionic Surfactant, Cationic, Surfactants, Amphoteric Surfactant, Non-ionic, Surfactant. Other Surfactants.
 - c. **Humectants** : Introduction, Choice of Humectants Unusual Humectants, Special Uses of Humectants.
 - d. **Antioxidants** : Introduction, General Oxidative theory, Measurement of Oxidation and Assessment of Oxidant efficiency, Choice of Antioxidant.
- 3) **Safety of Cosmetics** : Basic Concept of Cosmetic Safety, Safety test items & Evaluation method : Skin irritation, sensitization, Testing on Human (Patch test, Usage test)

Practical

- 1) Preparations of various types of Emulsions o/w & w/o.
- 2) Identification of types of Emulsions.
- 3) Preparation of Simple mixtures.
- 4) Preparation of suspension.
- 5) Stability study of suspension by use of thickening agents Flocculating agents

Reference :-

- 1) New Cosmetic Science by Takeo Mitsui
- 2) Harry's Cosmetology.
- 3) Cosmetic Science & Technology by Sagarin C.B.
- 4) Hand book of Cosmetic science & Technology by Marc paye, Andre O. Barel.

- 5) Novel Cosmetic Delivery Systems by Shlomo magdass, Elka Tuitou.
- 6) Formulation Manufacturing & Quality control by P.P. Sharma

1.2 Cosmetic Chemistry-I

Theory

- 1) Review of Electronic structure of atom, Periodic classification and group properties of elements.
- 2) Structure nomenclature, preparation and reactions of following groups in cosmetics. Alkanes, alkenes, Alkynes, Cycloalkanes, dienes and alkyl halides.
- 3) States of Matter – Intermolecular forces and their impact on states of matter, gaseous state- Behaviour of gases ideal and real gases. Liquification of gases.
- 4) Liquid – Surface tension, Viscosity.
- 5) Solids – Amorphous and crystalline solids, geometry, symmetry of crystals and physical properties of crystals. X-ray, crystallography, polymorphism its types and uses.

Practical

- 1) Systematic organic analysis of unknown organic sample (i.e. preliminary tests, detection of elements, groups), determination of physical constant and specific tests and preparation of derivatives.
- 2) Cosmetics material synthesis based on
 - a. Acetylating
 - b. Hydrolysis
 - c. Nitration
 - d. Condensation
- 3) Determination of surface tension and viscosity. (atleast 4 samples each).

References Book

- 1) Organic chemistry by R.T. Morrison on R. N. Boyd.
- 2) L.M. Atherton Bentley and Drivers text book of Pharmaceutical chemistry oxford Uni Press London.
- 3) A.N. Martin- Physical Pharmacy
- 4) Element of Physical Chemistry – Glasstone.
- 5) Physical Chemistry – A.J. Mec.

- 6) Quantitative Inorganic analysis – Vogel
- 7) The chemistry and manufacture of cosmetics. Vol. I & II

1.3 Herbal Cosmetics-I

Theory

- 1) History, definition, developmental and role of natural products in cosmetic and medicine.
- 2) Herbs description and morphology of organized and un-organized herbs.
- 3) Different systems of classification of natural excipients, their merits and demerits.
- 4) Storage and preparation of Herbal drugs for commercial market.
- 5) Adulteration of Natural products : Quantitative & quantitative methods of detection of adulteration.

Practical

- 1) Study of organoleptic properties, identification & Microscopical studies of
 - a. Rice Starch
 - b. Maize starch
 - c. Potato Starch
 - d. Wheat starch
- 2) Study of Physical characters and Identification test of
 - a. Agar
 - b. Gum-Acacia
 - c. Tragacanth
 - d. Guar Gum
 - e. Pectin
 - f. Cellulose
 - g. Cotton
 - h. Honey
- 3) Study of chemical Identification of vegetable fixed oils and waxes.

Reference Books :-

- 1) Natural Excipients – Dr. R.S. Gaud
- 2) Text Book of Pharmacognosy- Trease & Erans

- 3) Pharmacognosy By claus & Tayler
- 4) Test book of Pharmacology T.E. Wallis.
- 5) Materia Medica – By Nadkarni
- 6) Wealth of India CSIR

1.4 Dermatology- I

Theory

- 1) The cell structure & different tissues of body
 - a. Epithelial tissue
 - b. Connective tissue
 - c. Muscular tissue
 - d. Nervous tissue.
- 2) Detailed knowledge of structure & functions of skin 1) Types of skin 2) Deep wound healing .
- 3) Detail knowledge of structure & function of Hair. Types of hair & hair growth cycle.
- 4) Detailed knowledge of structure & function of sweat glands & sebaceous glands.
- 5) Detail knowledge of structure of Nail & Tooth.

Practical

- 1) To Study the compound microscope in details.
- 2) To determine the bleeding time of own blood sample.
- 3) To determine the clotting time of own blood sample
- 4) To estimate haemoglobin conc. of own blood sample.
- 5) To detect the Blood group of own blood sample.

Reference :-

- | | |
|----------------------|------------------|
| 1) Tortora Grabowski | 2) Ross & Wilson |
| 3) Kimber & gray | 4) Best & Taylor |
| 4) Wunwood | |

1.5 Computer Applications

Theory

1. **Theory (50 Hours) 1. Basic Electronics** : Semiconductors, p-n junction diode, LED, Photodiode and its uses. Rectifiers (half wave, full wave/with filters), Transistors, configurations, transistors, amplifiers. Introduction to integrated circuits, photo cells and photomultiplier tubes.
2. **Computers** : History of computers, simple model of computer and its working, parts of computers. CPU, memory, input/output devices, computer languages and their hierarchy machine language, assembly language, high level language, comparison of high level and low level languages especially C, Pascal, FORTRAN etc.. Introduction to microcomputers, concepts of operating systems. Elements of DOS. UNIX, WINDOWS etc. introduction of computer networks, spread sheets especially LOTUS 1-2-3, Concepts of data base and data base managements system : Objectives of data base management system, advantages and disadvantages of data base management system, examples of DBMS package (DBASE III). Introduction of MS Office..
3. **Flow charting and algorithm development** : Definition and properties of algorithm. Flow chart symbols and their use. Examples of efficient algorithm and flow-chart, Conversion of algorithm/flow chart to high level language.
4. **Introduction to Computer Programming** :_BASIC language: BASIC character set, constants variables, expression, Statements and system commands in BASIC, Entering and editing BASIC program, control structures, repetition statements (loops), nested loop, definite and indefinite loops, selection statements, array functions and subroutines. Concepts of files : Programme files and data files, Sequential files and random access files. Elementary BASIC programmes to numeric & string processing.
5. Computer applications in pharmaceutical and clinical studies.

Practicals (1 Hours demo per week)

- 1) Sorting of numerical data
- 2) Sales analysis, finding area wise sales, percentage of sales
- 3) Inventory control and order processing system.
- 4) Generation of graphs.
- 5) Resizing of windows, mouse, tutorials, switching from one application to another
- 6) Creating e-mail account
- 7) Preparation of power point presentation.

Reference Books:

- 1) Computer today (3rd edition) by Donald Landers.
- 2) Computer Applications in Pharmacy by William and Fassetl.
- 3) Computer Medicine by S.Rose.
- 4) Manual for MS office
- 5) Computer fundamentals by P.K. Sinha, Third Edition, BPB Publication.
- 6) Computing essentials by Timothy J.O. Leary.
- 7) Fundamentals of computers by V. Raja Raman

1.6 MATHEMATICS & STATISTICS-I**Theory**

An introductory review of elementary algebra quadratic equation, complex number, binomial expansion of $(1-x)^r$ for all value of r logarithms. Plane analytical geometry and mensuration.

1) Trigonometry :-

Measure of an angle degree and radians, trigonometrical ratios and their graphs identities for ratios of $(1/2, \dots)$ etc identities for the ratios of $(A-B)$ for Sin A, Cos B etc. Suitable problems on height and distance.

2) Differential calculus :-

Functions, limits, derivatives and differentiation functions. Derivatives as a rate measure. Velocity and acceleration maximum and minimum partial differentiation.

3) Differential equations :

Formation and derivation, order and degree, first order and degree, linear equation with constant coefficient, homogeneous linear equations (first method of solution only) Simultaneous differential equations which are linear and of first order.

4) Introduction to Statistics:

Frequency distribution, Histogram, Accumulation distribution curve, measures of central tendency, mean, median and mode. Mean deviation and standard deviation, correlation and coefficient of correlation.

Reference :-

- i) Engineering Mathematics – H. K. Dass (S Chand & sons)
- ii) Higher Engineering Mathematics – B.S. Grewal (Himalaya Publications)

- iii) A text book of Applied Mathematics – P.N.Wartikar & J.N.Wartikar.Vol.I &II)
- iv) Higher Engineering Mathematics by B.S. Grewal (Unit I, III, V)
- v) Plane Trigonometry Part I by S.L. Loney (Unit II)
- vi) Introductory course in Differential Equations,
- vii) Differential Calculus, Shanti Narayan.
- viii) Integral Calculus, Shanti Narayan, S. Chand & Co. Ltd.

**Syllabus Prescribed for B.Tech (Cosmetic)
IInd Semester Examination
(Implemented from the Academic Session 2012-13)**

2.1 Cosmetic Technology-II**Theory**

- 1) **Scope of cosmetics profession :-** Division of cosmetic profession academic, research, manufacturing, marketing cultivation of herbs used in cosmetic.
- 2) **Cosmetics Containers :** Introduction, Characteristic required by Cosmetic Containers- Quality Maintenance functional Design, Optimum Packaging.
Types of Cosmetic Containers :- Narrow Mouth bottles, Wide Mouth Bottles (Containers), Tubes, tubular Containers, Powders Containers, Compact containers, Stick containers, pencil containers Applicator containers.
- 3) **Material of construction for containers :** Types of Material Forming and processing methods. Container design procedure. Material test methods & Specifications. Trends in Container materials
- 4) **Biphasic Liquid formulations :** Emulsion & Suspension. Emulsion – types, Identification test of Emulsion preparation & stability, suspension- Flocculated and deflocculated suspensions, selection of wetting suspending and dispersing agents. Preparation and stability of biphasic liquid formulations.

Practical

- 1) Preparation of ointment bases
 - a. Hydrocarbon
 - b. Absorption
 - c. Water soluble
 - d. Water miscible

- 2) Preparation of paste & Jelly bases
- 3) Preparation of simple stick bases.
- 4) Preparation of cosmetics like cleansing cream, Lotion cold cream, vanishing creams atleast two examples from each category.

Reference :-

- 1) Mittal Test Book of Pharma Formulation B.I.E.T. Pilani.
- 2) The Pharmacopoeia of India
- 3) Remington's Pharmaceutical Practices.
- 4) Cooper & Gunn Dispensing for Pharmaceutical Students.
- 5) HUSA : Pharmaceutical Dispensing Mack Publishing co.

2.2 Cosmetic Chemistry-II

Theory

- 1) Physical Properties of materials potentially used in cosmetics. Dielectric constant, including polarization of non polar molecules refractive index, molar refraction, optical activity, interfacial tension, cohesion, adhesion and spreading adsorption at solid / liquid and solid /gas interfaces and their applications in cosmetics.
- 2) Cosmetic necessities – Acids, Bases, Buffers, Topical agents. protectives and antimicrobials, Astringents.
- 3) Chemistry of emulsions in cosmetic formulation and importance of branched chain compounds in cosmetics .
- 4) The Federal, Food drug, cosmetic act and regulation of cosmetics.
- 5) Hazards in chemistry laboratories and necessary precautions.

Practical

- 1) Molecular weight determination by various methods.
- 2) Study of various physical properties of cosmetic raw materials
 - a. Polarity
 - b. Refractive Index
 - c. Molar Refraction
 - d. Optical activity
 - e. Interfacial tension
 - f. Absorption of Solid / liquid, solid / gas
 - g. Identification testing of acid, base, buffer, Antimicrobials & astringents

References Book

- 1) Organic chemistry by R.T. Morrison on R. N. Boyd.
- 2) L.M. Atherton Bentley and Drivers text book of Pharmaceutical chemistry oxford Uni Press London.
- 3) A.N. Martin- Physical Pharmacy
- 4) Element of Physical Chemistry – Glasstone.
- 5) Physical Chemistry – A.J. Mec.
- 6) Quantitative Inorganic analysis – Vogel
- 7) The chemistry and manufacture of cosmetics. Vol. I & II

2.3 Herbal Cosmetics-II

Theory

- 1) Study of following with reference to their sources, characters, phytochemistry, chemical constituents, identification test & cosmetic uses of-
 - a. Lipids – Castor oil, Linseed oil, Olive oil, Arachis Oil, Sesame oil, Coconut oil, chaulmoogra Oil, shark liver oil, kokum butter, lanolin, beeswax, wheat germ oil, Jojoba oil, Rice Bran oil, Spermacti, soybean oil, sunflower oil, Almond oil, petroleum light mineral oil, lard, cotton seed oil, Shea butter.
- 2) Study of carbohydrates & starches agar, gum, acacia, tragacanth, gaugum, pectin, cellulose, cotton, honey.
- 3) Study of Mineral ingredients - Kaolin, bentonite, Talc, fullers earth, veegum.
- 4) Balsams & Resins, their types and study of the following – Balsams of Tolu, Balsam of Peru, Benzoin, Storax, Colophony, Asafoetida & other resinous material.
- 5) Tannins – Classification, Identification test and study of Black-Catechu, Nutmeg, Tannic Acid, Amla, Behra, Hirda, Arjuna, Ashoka.

Practical

- 1) Organoleptic study of
 - a. Balsam of Tolu b. Balsam of Peru c. Benzoin d. Storax
 - e. Colophony f. Asafoetida
- 2) Organoleptic study and Identification test of following tannin containing agents:-
 - a. Black-catechu

- b. Nutmeg
- c. Amla
- d. Behada
- e. Hirda
- f. Ashoka Bark
- g. Arjuna Bark

3) Detection of Adulteration of lipids.

- a. Olive oil
- b. Coconut oil
- c. Almond oil
- d. Castor Oil
- e. Sesame oil
- f. Soyabean Oil
- g. Cotton seed oil

Reference Books :-

- 1) Natural Excipients – Dr. R.S. Gaud
- 2) Text Book of Pharmacognosy- Trease & Evans
- 3) Pharmacognosy By Brady & Tayler
- 4) Test book of Pharmacology T.E. Wallis.
- 5) Materia Medica – By Nadkarni
- 6) Wealth of India CSIR

2.4 Dermatology- II

Theory

- 1) Temperature conservation & Heat balance of the body. Factors influencing it.
- 2) Blood i) Composition & function.
 - i. Blood groups
 - ii. Coagulation of Blood
 - iii. Disorders of blood
- 3) Resistance & Immunity a detailed study.
- 4) Food & nutrition, Balanced diet.
- 5) Brief knowledge of different system of body like
 - a. Circulatory system
 - b. Respiratory system

- c. Alimentary system
 - d. Excretory system
 - e. Nervous system
 - f. Endocrine system
 - g. Sense organs anatomy & their functions
- 6) Proper Hygiene Habits

Practical

- 1) To demonstrate & setup neubar slide under the microscope.
- 2) To determine the total WBC of own Blood sample.
- 3) To determine the differentiate leucocyte count of own blood sample.
- 4) To determine total RBC of own blood sample.
- 5) To study of model of skin in detail.
- 6) To study the histology of different organs.
- 7) To study the structure (model) of eye.

Reference :-

- 1) Tortora Grabowski
- 2) Ross & wilson
- 3) Kimber & gray
- 4) Best & Taylor
- 5) Wunwood

2.5 Perfumes & Colours - I

Theory

- 1) Fixatives :- Introduction , sources, classification, chemical composition and uses of following -
 - a. Animal Source :- Civet, Musk, Ambergris
 - b. Plant Source –
 - c. Resinous Fixatives – Benzoin, Balsams, Myrrh, Cinnamyl Alcohol, Orris, Vanillin.
 - d. Essential Oils fixatives – Sandal wood , lemon, cinnamon, patchouli oil, Phenyl acetaldehyde, vanillin.
 - e. Synthetics fixatives – Diethyl pthalate Benzyl- Benzoate, alcohols Acetophenone, musk-ketone, musk- Ambrette, Helcotropin, hydroxy citronellal, indole.
- 2) Cosmetics of fragrance : Olfaction & its role, History of perfume, classification sources of fragrance.

- 3) Methods of manufacturing : Method & General names, compounding, safety.

- Alcohols :- a) Manufacturing of ethanol
b) Purification of ethanol
c) Deodorization of ethanol

Practicals

- 1) Distillation of alcohols (atleast 4 practicals)
- 2) Distillation of essential oil (atleast 4 practicals)

Reference Books:

- 1) Essential oil vol I by Gunther
- 2) Perfumes soaps & cosmetics by Poucher.
- 3) Perfumes, flavours & Essential oils, Industries SBP Board
- 4) Manufacture of perfumes, cosmetics and detergents by Prasad.
- 5) Cosmetics Science & Technology by Sagarin.

2.6 Mathematics & Statistics-II

Theory

1) Integral Calculus :-

Indefinite quteral method of substitution, integration by part integration of algebraic function. Definite integral and their properties . Evaluation of area & volume in simple cases.

2) Statistics : Correlation and coefficient of correlation, regression analysis, ANOVA Testing. (One way and two way). Probability - problems based on it.

Diagrammatic representation of data, bar, pie, 2-D and 3-D diagrams, standard deviation and standard error of means, Co-efficient of variation properties of kurtosis and skewness, method of least squares, nonlinear regression, statistical inference, students and paired t-test, F-test applications of...., statistical concepts in Cosmetics Sciences.

3) Numerical Integration :-

Trapezoidal rule, Simpson's rule and Simpson's 3/8 rule.

References :-

- i) Engineering Mathematics- H.K.Dass (S.Chand & Sons)
- ii) Higher Engineering Mathematics-B.S.Grewal (Himalaya Publications)

- iii) A text book of Applied Mathematics- P.N.Wartikar & J.N.Wartikar, Vol.-I & II)
- iv) Higher Engineering Mathematics by B.S.Grewal (Unit-I, III, V)
- v) Plane Trigonometry Part-I by S.L.Loney (Unit-II)
- vi) Introductory Course in Differential Equations.
- vii) Differential Calculus, shanty Narayan.
