**Master of Cosmetic Technology (Quality Assurance) (Semester Pattern)**

**Prospectus No.20131915**

# संत गाडगे बाबा अमरावती विद्यापीठ

# SANT GADGE BABA AMRAVATI UNIVERSITY

## गृहविज्ञान विद्याशाखा

## (FACULTY OF HOME SCIENCE)

# PROSPECTUS

## OF

**The Examination for the Degree of Master of Cosmetic Technology with Specialization in**

***Quality Assurance***

**Semester-I, Winter-2012**
**Semester-II, Summer-2013**
**Semester-III, Winter-2013**
**Semester-IV, Summer-2014**

2012

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**Dineshkumar Joshi**
Registrar,
Sant Gadge Baba
Amravati University
Amravati - 444 602

**I N D E X**

**Master of Cosmetic Technology**

**(Quality Assurance)**

**Semester - I to IV**

**Prospectus No. 20131915**

## 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 Inprovement 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. : 28 / 2012 Dated :- 29.6.2012

**Subject : Examinations leading to the Degree of Master of Cosmetic Technology in the Faculty of Home Science (Semester Pattern - Credit Grade Based System), Direction, 2012**

Whereas, the Degree of Master of Technology (Cosmetics) in the Faculty of Home Science is in existence in the University under Ordinance No.24 of 2004.

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 M.Tech. (Cosmetics) (All Specializations) along with 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 M.Tech. (Cosmetics) as per semester pattern and credit grade system.

AND

Whereas, the making of Ordinance/Regulation for M.Tech.(Cosmetics) Semester-I to IV 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 the 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 Master of Cosmetic Technology in the Faculty of Home Science (Semester Pattern - Credit Grade Based System), Direction, 2012".

2) This direction shall come into force from the date of its issuance.

3) The Examinations in Master of Cosmetic Technology course shall be conducted in following four specializations.

   I) Cosmetic Technology

   II) Quality Assurance

   III) Perfumes & Colours

   IV) Herbal Cosmetics

4) Subject to the compliance of the provisions of this Direction and any other ordinances in force from time to time, an applicant for admission to the Master of Cosmetic Technology Semester-I examination shall have passed Degree course in Cosmetic Technology of Amravati University or of any other statutory University equivalent thereto possessing minimum of 50% marks or its equivalent grade point in C.G.P.A. For admission to M.Tech. Semester-II, a candidate should have satisfactorily complited Semester-I.

5) An applicant for admission to the final M.Tech. (Semester-III & IV), Examinee should have satisfactorily completed Ist and IInd Semester i.e. the First M.Tech. Examination of this university, and shall have prosecuted a regular course of study in the Department/College as prescribed in this Ordinance. An applicant for the examination to the Final M.Tech. (Semester-III & IV) shall not be allowed to take the examination if he/she fails to submit to his/her dissertation on or before the 20th December or 31st May of the calendar year in which he/she has to take the examination.

6) The duration of the course leading to the degree of Master of Cosmetic Technology in the Faculty of Home Science shall be of two years consisting of Four Semesters, each of six months duration. There shall be Four examinations leading to the degree of Master of Cosmetic technology namely :

   a) The first Examination shall be held at the end of six months which shall be known as Master of Cosmetic Technology Semester-I examination.

   b) The Second Examination shall be held at the end of second semester and shall be known as Master of Cosmetic Technology Semester-II Examination.

   c) The third Examination shall be held at the end of third semester and shall be known as Master of Cosmetic Technology Semester-Ill Examination.

d) The fourth Examination shall be held at the end of fourth semester and shall be known as Master of Cosmetic Technology Semester-IV Examination.

7) The supplementary examinations shall be held for all semesters of M.Tech. examinations.

8) The Examination shall comprise of:

| | | |
|---|---|---|
| (a) Semester-I | | |
| (i) | Theory ' | 320 marks |
| | and it's Internal assessment | 80 marks |
| (ii) | Practical | 140 marks |
| | it's Internal assessment | 60 marks |
| (b) Semester-II | | |
| (i) | Theory | 240 marks |
| | and it's Internal assessment | 60 marks |
| (ii) | Practical | 140 marks |
| | it's Internal assessment | 60 marks |
| (c) Semester-III | | |
| (i) | Seminar on Research Envisaged for Dissertation | 100 marks |
| (ii) | Seminar Recent Trends in Cosmetic Sciences | 150 marks |
| (d) Semester IV | | |
| (i) | Seminar, Dissertation & Viva voce Internal | 100 marks |
| (ii) | Seminar, Dissertation & Viva voce External | 200 marks |
| | Grand Total | 1650 marks |

**For theory examination :-** For Internal assessment / sessionals / home assessments two sessional examinations shall be conducted each of 20 marks per semester. Average marks obtained out of the two examinations will be awarded.

**For Practical Examination :** One sessional examination each of 30 marks shall be conducted and marks will be awarded. The Head of the Department / Principal shall maintain in his / her office a complete record of the marks obtained by the candidates towards the Internal Assessment / Sessional and shall send them to the Controller to Examinations at least 15 days before the commencement of the theory examination.



9) Students admitted for Semester III of Maser of Cosmetic Technology shall carry out research under an approved guide belonging to that institution / college.

10) The defence examination of an examinee of Semester IV examination of master of cosmetic Technology shall be carried out by

a. External Examiner appointed by the University, and

b. The guide guiding the Dissertation / Thesis

c. In Case of dispute, the opinion of the external examiner shall be final and binding.

d. Provided further that the external examiner shall submit a report to the controller of Examinations immediately.

11) i) Seminar on Recent Trends in Cosmetic Sciences of third semester should be held at college level & marks should be submitted to the university at the end of third semester.

ii) Viva voce & defence examination based on the dissertation work will be carried out at the end of fourth semester in presence of external & internal examiners & marks should be sent to the university at the end of fourth semester.

12) i) The Scope of the topics in various papers shall be as indicated in the syllabus .

ii) The medium of instruction and the examination shall be English only.

13) An Examinee who secures minimum of 50% of Marks in each theory paper, Seminar, Dissertation / Thesis, Viva-Voce shall be declared successful at the examination.

14) The fees for the examination shall be as prescribed by the University from time to time.

15) i) An Examinee who is unsuccessful at an examination shall be eligible for admission to the Examination in next theory / practical / Seminar dissertation Thesis and Viva Voce on pay of such fees as may be prescribed by the University from time to time.

ii) For being eligible for exemption in a paper or a practical or dissertation and viva voce a candidate must have obtained minimum 50% of marks in that paper / Practical / Dissertation and viva voce as the case may be.

16) Without prejudice to the other provision of Ordinance No. 6 relating examinations in general the provisions of paras 5,8,10,23 and 31 of the said Ordinance shall apply to every candidate.

17) Provisions of Ordinance No. 18 of 2001 relating to 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 deficiency of marks in a subject in all the faculties prescribed by the Statute No. 18, Ordinance 2001 shall apply to the examination under this Direction.

18) The examination leading to the Semester I / Semester II / Semester III/ semester IV of Post graduate Master degree in Cosmetic Technology shall be held twice a year at such places and on such dates as decided by the Board of Examination.

19) The Schemes of Teaching & Examinations with credits along with other details & features of credit system for First, Second, Third and Fourth Semester for the Degree course "Mater of Cosmetic Technology" shall be as per **Appendices-I to III**.

20) Notwithstanding anything to the contrary in this Direction, no person shall be admitted to these examinations if he/ she has already passed the same examination or any examination equivalent there to any other statutory University.

21) The Degree, in the prescribed form shall be signed by the Vice-Chancellor of the University.

Sd/-

Amravati
Dated : 28/06/2012

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

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## APPENDIX II
## SCHEME FOR CREDITS BASED ON CONTACT HOURS DISTRIBUTION OF SEMESTER III & IV

### SEMISTER- III

The topic for the **research envisage for dissertation and seminar on recent trends in Cosmetic Sciences** shall be assigned to him/her by the Guide within one month from the date of the commencement of the third semester.

**A. SEMINAR ON RESEARCH ENVISAGED FOR DISSERTATION : 18 Hrs/Wk = 9 Credits**

| Contents | Credits |
|---|---|
| 1 . Selection of research topic and their applicability | 02 |
| 2. Introduction and information retrieval systems | 02 |
| 3. Reading research papers | 02 |
| 4. Skill in oral presentation | 03 |
| **Total** | **09** |

**B. SEMINAR ON RECENT TRENDS IN COSMETICS SCIENCES**

| Contents | Credits |
|---|---|
| 1. Introduction and information retrieval systems | 01 |
| 2. Organization of material and references | 01 |
| 3. Representation | 01 |
| 4. Skill in oral presentation | 02 |
| 5. Questioning and defending | 02 |
| 6. Report | 02 |
| **Total** | **09** |

"The report on seminars shall be submitted by respective guide/supervisor to Head of Department/Principal."

### SEMESTER – IV

**Seminar, Dissertation & Viva-voce**

| Contents | Credits |
|---|---|
| 1. Introduction, information retrieval systems | 02 |
| 2. Experimental Work | 06 |
| 3. Scientific Contents | 02 |
| 4. Result/ Conclusion | 04 |
| 5. Organization of scientific material, thesis, dissertation and references | 04 |
| **Total** | **18** |



## APPENDIX-III
## Sant Gadge Baba Amravati University, Amravati
## M.Tech (Cosmetics) Syllabus
## Credit-grade based performance and assessment system (CGPA))
## FEATURES OF THE CREDIT SYSTEM

- Master's degree would be of 72 credits each.
- 4 credit course of theory will be of four clock hours per week running for 12 weeks.
- 3 credit course of theory will be of four clock hours per week running for 12 weeks.
- 1.5 credit course of practical will consist of 3 hours of laboratory exercise for 12 weeks.
- 1.5 credit course of practical/demonstration will consist of 6 hours of laboratory exercise for 12 weeks.

**FIRST SEMESTER SHALL HAVE 5 THEORY COURSES, 2 PRACTICAL COURSES**

- 2 Theory courses x 3 credits = 06 credits
- 3 Theory courses x 4 credits = 12 credits
- 2 Practical course x 1.5 credit = 03 credit

Total = 21 credits

**SECOND SEMESTER SHALL HAVE 3 THEORY COURSES, 2 PRACTICAL COURSES**

- 3 Theory courses x 4 credits = 12 credits
- 2 Practical course x 1.5 credit = 03 credit

Total = 15 credits

**THIRD SEMESTER SHALL HAVE 2 PRACTICAL COURSES OF 18 HRS./WK EACH**

- 36 Practical courses/wk of 0.5 credit each = 18 credit

Total = 18 credits

**FOURTH SEMESTER SHALL HAVE 1 PRACTICAL COURSE 36 HRS./ WK**

- 36 Practical courses/wk of 0.5 credit each = 18 credit

Total = 18 credits

**EVERY STUDENT SHALL COMPLETE 72 CREDITS IN A MINIMUM OF FOUR SEMESTERS. FIRST SEMESTERS WILL HAVE 21 CREDITS, IIND SEMESTER WILL HAVE 15 CREDITS, THIRD SEMESTER WILL BE OF 18 CREDITS AND FOURTH SEMESTER WIILL BE OF 18 CREDITS.**

- First semesters 21 credits = 21 credits
- Second Semester 15 credits = 15 Credits
- Third semester 18 credits = 18 credits
- Forth semester 18 credits = 18 credits

**Four semesters total credits = 72 credits**

## SCHEME OF SYLLABUS AND CREDIT SYSTEM

1) One credit is equal to one theory hour therefore three/four credits will be for each theory subject as the case may be & one credit is equal to two practical hours therefore for each practical subject there will be 1.5 credits.
2) Nine credits, in third semester have been allocated for recent trends in the Cosmetic Sciences.
3) Total Eighteen credits have been allocated for the seminar, dissertation & viva voce.
4) 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 affiliated colleges.
5) Credit system offers more options to students and has more flexibility.
6) Students can get requisite credits from the concerned colleges where he is mutually permitted on terms mutually agreed to complete the same and be eligible to appear for term end examination.
7) The term end examination, however, shall be conducted by the Sant Gadge Baba Amravati University in the allotted centers.
8) The research/dissertation work shall be compulsory.
9) These activities, including preparation of the result-sheets for the students, would be co-ordinated by the Department Examination Committee comprising Course in-charges and HOD or Head of the institution.
10) A student who passes the internal tests but fails in Term End Examination of a course shall be given FF grade.
11) 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.



12) 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).
13) Grades-Marks for each course would be converted to grades as shown in following Table 1.

**Table 1: Grade point for Theory/ Practical/Laboratory course /Seminar**

| 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 | |

14) Equivalence of the conventional division/class with the CGPA in final semester is in accordance with the following table 2 and Grade Points for SGPA and CGPA of M.Tech in Table-3.

**Table-2: 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-3 : Grade Points for SGPA and CGPA of M.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 |
| 5 - 5.49 | CD |
| 0 - 4.99 | FF |
| Absent in Examination | ZZ |

15) 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.

**16) 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.

$$SGPA = \frac{U1xM1 + U2xM2 + \ldots UnMn}{U1+U2+\ldots\ldots Un}$$

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 Grade 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 final semester of the course (i.e from Semester I-IV).

$$CGPA = \frac{\sum_{n=1}^{n=4} SGPA(n)C(n)}{\sum_{n=1}^{n=4} C(n)}$$

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



## ACADEMIC CALENDAR AND TERMS

The terms and academic activities of the college affiliated to 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 (Semester I, and III) | : As per University academic calendar |
| Vacation | : As per University academic calendar |
| Beginning of Second Term (Semester II, and IV) | : As per University academic calendar |

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**Syllabus prescribed for the course of Master of Cosmetics Technology**
**(Ist Semester)**
**(Implemented from the Academic Session 2012-13)**
**1-T-1 Principles of Cosmetics Technology**
**(Common for all specialization)**

**Theory :**

**Inter facial Phenomena:** Liquid-Liquid interface: Insoluble monolayers, surface pressure, surface potential, surface rheology and their measurement, structure and state of monolayers, mixed monolayers, Macromolecular films, Biological membranes, Liquid-Solid interface, details study of weting , detergency and water repellance.

Solubilization : Micelle formation, factors affecting micelle formation and physical methods of investigation of miceller solutions, Theory and mechanism of solubilization. Some factors in the formulation of cosmeticeuticals containing solubilized materials like choice of surface active agents, effects and the nature of the solubility, effect of co-solublizing agents on the solubilizing action of surface active agents, effect of temperature on the solubilization, phase equilibria in system containing surfactants, application of solubilization, solubilization of phenolic disinfectants, idophers, Vitamin preparations, Hormones solution, steroids, flavors and perfumes, etc.

**Theories of Dispersion Techniques :** General basic physical consideration, adsorption and interfacial energetics and study of relevant equations, adsorption on solid surface, electrical phenomena at interfaces, particle-particle interactions, influence of polymer adsorption on particle, vehicle interaction, flocculation kinetics, controlled flocculation, Application of dispersion techniques in formulation of emulsion and suspension.

**Suspension :** Theory, production, equipment, Industrial processing and large scale manufacturing.

**Emulsions** : Electrical theories of stabilization of emulsions, assessment and prediction of emulsion shelf life, equations involved in emulsion stability stress conditions and physical parameters employed to evaluate emulsion stability, presentation of interaction between preservation and emulsion ingredients like surface active agents hydrophilic polymers, suspended particle, packaging materials etc. prediction of preservative efficiency. Production, equipments, Industrial processing and large scale manufacture.

**Rheology** : Theoretical consideration. Thixotropy, spurs and bulges in the hysterisis loop continuous shear rheometry of semisolids, viscoelasticity, the creep test, study including principle of operation and application cone & plate, blonnei, Mac Michal, Brooke - field viscometer. Chemical and physical factors affecting rheological proporities. Rheology and product



design, Rheology of cosmetic products. Rheological and Biological application.

**Micromerities**: Adsorption, air permeability techniques and determination of surface area and size of particals and classification and evolution of some basic properties of powders, flow properties of various powder system.

**Recommended Books:**


1) "Advanced in Pharmaceutical Sciences" Vol. I, II, III & IV, edited by Bran, Becheti & Carless.
2) Martin A.N. "juiysical Pharmacy"
3) Lachman et al "The Theory and Practice of Industrial Pharmacy".
4) "Remington, Pharmaceutical Practice" Mac Publications, USA.
5) Badger W.L., & Banchero "Introduction of Chemical Engineering."
6) Chemical Engineering by Richardson & Crudson.


**1-T-2 Quality Assurance Technique**
**(Common for all specialization)**

**Theory :**

1) The theoretical aspects, basic instrumentation and applications of following technique in analysis of cosmetic raw materials and cosmetic preparation.
   a. Separation technique :- Gel filteration Chromatrography, ion exchange chromatrography, affinity chromatography, HPLC, HPTLC, GLC and paper chromatography.
   b. Introduction and brief study of spectroscopic technique UV Visible , IR, NMR, Mass , Atomic absorption spectroscopy and flame photometry.
   c. Light scattering methods in qualitative analysis. Nephilometry and Turbidimetry.
2) General methods of analysis to determine quality of raw materials used in cosmetic industry and evaluation of products :- Emulsion (Liquid, Cream), Suspension (lotion), Powders (Talcum, Baby, Compact), Lipsticks, Mascara, Kajal, Hair Care products (Shampoo, Colorants), Tooth paste, tooth powder, Deodorants, aerosols etc.
3) Validation of analytical methods and calibration of instruments and equipments.
4) Sampling plans and procedures
5) Stability testing – Role of stability testing, stability test guidelines, protocols of stability testing including testing under different climatic zones, and conditions, presentations and recording of stability data and determination of shelf life.

6) Documentation – Importance of documentation, statutory requirements and procedure for documentation.

7) Principles and procedure involved in Biological tests of Following.

   a. Absence of pyrogens.

   b. Histamine like substances

8) Determination of toxic elements.

9) Introduction of skin absorption and studies and their importance.

10) Quality assessment of packaging containers, closures etc

11) Compliance and drug and cosmetic act 1940 with reference to provisions for pakaging and labelling (Rule 150A, Schedule S) permitted colors, flavours etc.

**Books Recommended**


1) Principles of Instrumental analysis by D.A. Skoog
2) Instrumental methods of chemical analysis by B.K. Sharma
3) Instrumental methods of chemical analysis by G.R. Chatwal and S.K. Anand
4) Introduction to instrumental analysis by F.D. Brawn
5) Analytical chemistry by G.D. Christian.
6) Classification of cosmetic raw materials and adjuncts IS 3958 of Indian standard.
7) F.V. Smith , J.T. Stewart Text Book of Bio pharmaceutical analysis.
8) Indian Pharmacopocia 2007 controller of publications Govt. of India, New Delhi.
9) Beckett and stanlake practical pharmaceutical chemistry part I & II
10) K.A. Cannors, Text Book of pharmaceutical analyser


## 1-T-3 Product Development & Formulation

**(Common for all specialization)**

**Theory :**

**1) Development of New Cosmetics :-** Steps involved in development new cosmetics, abstracts to its evaluation, limitation of screening procedures, skin toxicity test. Generation of Laboratory data & new cosmetics application as per WHO norms. Requirements and guidelines on clinical trials of new cosmetic in India.

**2) Pilot Plant scale up techniques –** Purpose & function, concept of & pilot plant for development & contract, planning of pilot plant size of pilot plant, organization & personnels, as per schedules



**3) Topical active delivery system –** Percutanous absorption, factors affecting vehicles and in cosmetic preparation, enhancers, controlled released cosmetics & general consideration, design & formulation options as microencaplation, Liposome, nano technoogy etc.

**4) Product Developemnt Approaches :-** Product Development Approaches for Emulsion, suspension, powders, shampoos, tooth paste, antiperspirants, deodorant, Nail lacquers, Aerosal, Soaps & perfume.

**5) Performualtion studies :-** Physicals & chemical problems inherent in development of new formualtion.

**6) Physical proteries –** physical form, particle size, solubility wetting of solid, flow properties, organoleptic properties. Chemical properties & stability .

**Recommended Books**


1) Cosmetic Science and Technology Vol I, II, III by Sagarin.
2) Harry's Cosmetology
3) Theory and Practice of Industrial Pharmacy by Leon Lachman.
4) New Cosmetic Science
5) Indian Herbs by Chopra
6) Wealth of India by CSIR


## 1-T-4 Biostatistics

**(Common for all specialization)**

**Theory :**

**Biostatistics** :- Histograms and Frequency Polygons, measure of central tendency (mean, median and mode), dispersion standard mean and quartile deviation and range), skewness and kurtosis : Probability - Bayes theorem, variable and distributions (including Chi-square, t and f test); Non-parametric tests - Sign, run and order statistics median tests; Confidance intervals, square methods, regressions and randomizations; Analysis of variance (1-2- and 3-way) and covariance; quantitative response relationship and probit analysis, Correlation and Co-efficient of Correlation.

**REFERENCES**


1) Pharmaceutics Statistics by Bolton Marcel Dekkar inc.
2) Biostatistics and Computer by Dr.Paradkar.

## 1T5 Research Methodology
## (Common for all specialization)

**Theory :**

**Research Methodology:-** Introduction to Research Methodology – Importance of research in decision making, defining research problem and formulation of scientific experimental design.

Data Collection and Measurement:- Methods and techniques of data collection sampling and sampling designs attitude measurements and scales.

Data Presentation and Analysis :- Data processing statistical analysis and interpretation of data non-parametric tests multivariate analysis of data model building and decision making.

Report Writing and Presentation :- Substance of reports, formats of reports, presentation of a report.

**Research Paper**: Preparation of research paper, presentation of research paper.

**Reference Books :-**

1) Methodology of Economic Research by A.K.Dasgupta.

## 1-P-1 Quality Assurance Technique
## (Common for all specialization)

**Practicals**

1) Use of spectrophotometer for analysis of cosmetic raw materials and their formulations.
2) Applications of Basic Chromatographic techniques.
3) Simultaneous estimation of combination preparation.
4) Application of IR for interpretation of samples with different functional groups.
5) Analysis of cosmetic and their adulteration with reference to drugs and cosmetic rules 1945.

## 1-P-2 Product Development & Formulation
## (Common for all specialization)

**Practicals**

1. Evaluation of Stability of Emulsions through different methods,
   a. Accelerated Stability Study,
   b. Particle Size Analysis,
   c. Other Parameters.



2. Evaluation of Stability of Suspensions through different methods.
   a. Accelerated Stability Study.
   b. Particle Size Analysis.
   c. Other Parameters.
3. To measure Zeta potential of emulsion and to co-relate with stability.
4. To measure Zeta potential of suspensions and to co-relate with stability.
5. To Study the thixotropic behaviours of some creams.
   a. Viscosity
   b. Sedimentation.
6. To Study the thixotropic behaviours of some lotions.
7. a. Viscosity
   a. Sedimentation.
8. To demonstrate the effect of air entrapment on rheology of creams.
9. To determine the cmc of surfactants by stalagmometer. (Anionic, Cationic, Nonionic, Ampholytic)
10. To determine the cmc of surfactants by capillary rise method.
11. To study the effect of salts on cmc of surfactant.
12. Determination of amount of surfactants with respect to phase-volume ratio.
13. Antioxidants, Emulsifying agents.'
14. Interaction between the preservatives, antioxidants, emulsifying agents.
15. Interaction of above mentioned additives on the different packaging material.
16. To study the effect of pH on partition co-efficient of weak acids.
17. To study the effect of solvents on partition co-efficient of weak acids.
18. To study the flow properties of powders.
    i. Effect of Particle size, b) Moisture content on angle of repose,
    ii. other additives like glidents & lubricants.

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**Syllabus prescribed for the course of Master of Cosmetics Technology with Specialization in Quality Assurance Technique**
**(IInd Semester)**
**(Implemented from the Academic Session 2012-13)**

### 2.T.1 Advanced Quality Assurance Technique-I

**THEORY :**

1 Concept of total quality management [TQM], Different quality management systems, ISO 9001: 2000, ISO 14000: their philosophy, awards and accreditation. Quality Audit of process, systems, facility and vendor.

2 Documentation requirements in cosmetics industry for GMP compliance. Product developments in stage documentation, Site master file, manufacturing documents such as master formula record, Batch records, retention samples and records, Quality control documentation, batch release documents, distribution and recall records, complaints files and log books.

3 Regulatory basis for process validation, validation of transdermal system, aerosol, cosmeceutical ingredients, water and air handling system, integrated packaging and sterilization., raw material and cleaning processes. Validation in contract manufacturing.

**4 Packaging Technology:** Concept in cosmetic packaging. The packaging function. Regulatory aspects of cosmetic packaging system. Package design research, Packaging materials with special reference of glass, plastics, metals and polymers. Control of packaging materials. Ancillary materials used in packaging. Types and testing of containers and closures, Pharmacopoeial tests and specifications closure system. . Stability of packages and packaging material. Sterilization of packaging materials. Printing and decoration of labels and packages Package testing Defects in packaging..

**Books and References Recommended**


1. Wiling S.H., Tuckerman M.M and Hitchings W.S.; "Good manufacturing practices for pharmaceuticals" Drugs and Pharm.Sci. Series, Marcel Dekker Inc., N.Y.
2. Lofts, B.T. and Nash, R.A.; "Pharmaceutical process validation", Drug and pharm.Sci. Series, Marcel Dekker.
3. Swarbrick and Boylan; Encyclopedia of pharmaceutical technology, Marcel Dekker Inc., N.Y.
4. Carlton, F.J. and Agalloco J.P.; validation of aseptic pharmaceutical processes, Marcel Dekker Inc., N.Y.





5. Despautz,J.F; "automation and validation of information in pharmaceutical processing, Marcel Dekker Inc., N.Y.
6. Rothary B.; ISO 14000 and ISO 9000; gower.
7. Barry D.A.; Statistical design and analysis in pharmaceutical sciences,; Marcel Dekker Inc. N.Y.
8. Bergman, S.W. and Gittins J.C.; Statistical methos for pharmaceutical research and planning, Marcel Dekker Inc, N.Y.
9. Willard, "Instrumental method of analysis".
10. http://www.who.int/en
11. www.fda.gov.
12. Dean, D. A. Evans, E. R. and Hall, j. H. "Pharmaceutical Packaging Technology",


**Semester – II**

### 2.T.2 Advanced Quality Assurance Technique-II

**THEORY:**

**1.** Fundamental of cosmetic product development:

Regulatory requirements for cosmetic products, consumer safety consideration with microbiological preservation of cosmetic, intellectual property issue: patents & trade secrets. . Toxicity testing in cosmetics

2 Quality management of cosmetics: Preparation of facial cream-vanishing cream,cold and moisturizing cream,face powder. Preparation for oral hygiene-Dentrifices,mouthwashes, Preparation for hair-shampoos, Hair dyes and conditioners ,Body cosmetics-Antiperspirant and deodrant,talcum powder

**3** Spectroscopic methods: Theory, Instrumentation, chemical applications and structural elucidation by UV, IR, FTIR and Emission spectroscopy.

**4** Separation Techniques: Fundamental principles, theory, instrumentation and applications of Gas-liquid chromatography, HPLC, Gel chromatography, HPTLC, normal and reverse phase chromatography, and Ion Pair Chromatography. Counter-current chromatography, droplet counter-current chromatography, solvent system, ion exchange affinity, size exclusion, cation/anion exchange, gel electrophoresis

**References:**


1) Theory and applications of ultraviolet spectroscopy – M. Orchin and H. H. Jaffe, John Wiley and Sons, N. Y.

2) Spectrometric identification of organic compounds – Silverstein, Basseler, Morril, John Wiley and Sons, N. Y.

3) Instrumental Methods of Analysis– Willard, Merritt, Dean, CBS-Publishers and Distributors, Delhi

4) Applications of Absorption Spectroscopy of Organic Compounds – J. R. Dyer, Prentice Hall, London

5) Chemical Applications of Infra-red spectroscopy – C. N. R. Rao., Academic Press, N. Y.

6) Quality assurance of drugs in Pharmaceutical chromatography by P.D.Sethi.

7) Introduction to High Performance Liquid Chromatography – R. J. Hamilton, Chapman and Hall, London

8) Pharmaceutical Analysis Modern Methods-Part A and Part B – J. W. Munson, Marcel and Dekker

9) Indian Pharmacopoeia-2007

10) Martindale: The complete Drug Reference – 2007

11) Impurities Evaluation of Pharmaceuticals- Satinder Ahuja

12) Modern Instrumental Analysis, Vol 47(Comprehensive Analytical Chemistry) - Satinder Ahuja , Neil Jespessen

13) Jenkins Quantitative Pharmaceutical chemistry,adelbert M.Khevel,Frans Diagangi

14) Practical HPLC Method Development, 2nd Edition- Lloyd R. Snyder, Joseph J. Kirkland, Joseph L. Glajch

### 2.T.3 Skin Dermatology
### (Common for all specialization)

**Theory : Skin Dermatology**

**i) Skin :** Anatomy and Physiology of skin and appendages. Hair, Nail, Sebaceous Gland, Sweat Gland.

**ii) Common Dermatological Diseases and Therapy :** Acne, Alopecia, Dermatitis (Atopjc Contact), Dry skin, Hyperpigmentation and Hypopigmentation, Miliria Seborrheic dermatitis and Dandruff, Sun reaction and protection, Preparation of skin aging.

**iii) Formulary :** Topical corticosteroids, Topical anti-infective, healing agents, Depilatories and removal of excess Hair by thermolysis, electrolysis, Keratolytic, Pigmenting agent.

**References:**

1) Anatomy and Physiology by Ross G Wilson.



2) Mannual of Dermatotoyc Therapeutics by Kennth A. Amdt, (A Little • Brown Company)

3) Roxburgh's cottmon skin diseases.

### 2.P.1 Advanced Quality Assurance Technique-I

**PRACTICLES : 60 Hours (3 hrs. /week)**

1. Evaluation for microbiological testing in cosmetic product
2. Experiments on chromatography: TLC and paper Chromatography
3. Determination of water in sorbitol, sodium citrate
4. Analysis of some cosmetic formulations by ISI methods (minimum one for each analytical methods for each formulations)
5. Testing container, closure, liners, glass, plastics, used for packaging
6. Test for packaging material, cartons, aluminum foils, strip packing, blister packing, etc.

**Reference Books :**

Latest editions of I.P., B.P., U.S.P

Latest ISI Booklets for respective cosmetic formulations

### 2.P.2 Advanced Quality Assurance Technique-II

**PRACTICLES**

Isolation, characterization like melting point, mixed melting point, molecular weight determination, functional group analysis, chromatographic techniques for identification of isolated compounds and interpretation of UV&IR data of following.

Eugenol from Clove, Curcumin from Turmeric, Sennosides from Senna, Hesperidine from Orange peel, Embelin from embela Ribes, Glycyrrhizin from glycyrrhiza glabra, Plumbigin from Plumbago Rosea, Solarin from potato, Naringen from grape fruit peel, Trimystin and Myristin from Nutmeg, Azylic acid from Castor oil, Pectin from Orange peel, Lycopene from Tomato peel, Epicatechin from Cashew kernel, outer kernel, Piperin from Black pepper

**References**

1. Organic synthesis: Fisher and William Son (CBA Publisher)
2. Mann and Saunders, 'Practical Organic chemistry' (Orient Longman)
3. A.I.Vogel, 'Practical Qualitative and Quantitative Organic Chemistry (Orient Longman)

4. Systematic Identification of Org. Compounds Shriner & Herman 1998 John Wiley & sons

5. Reaction Synthesis in Organic Chemistry Laboratory Tiezel/ Ether 1989 University Science

**Syllabus Prescribed for the course of Master of Cosmetics Technology**
**(IIIrd Semester)**
**(To be implemented from the Academic Session 2013-14)**
**(Common for all specialization)**

**Seminar :**

(a) The seminar shall be based on research envisaged for dissertation.
(b) The seminar shall be based on recent trends in Cosmetic Sciences.

**Syllabus Prescribed for the course of Master of Cosmetics Technology**
**(IVth Semester)**
**(To be implemented from the Academic Session 2013-14)**
**(Common for all specialization)**

**Dissertation :**

Every student for the degree of Master of Cosmetic Technology (all specialization) shall be required to undertake a dissertation work involving Methodical research under the supervision of an approved guide and submit three copies of the report of the dissertation work, duly certified by the supervisor to the Head of the Department. .

**Research Reviews:**

**Seminar on Dissertation :-**

The candidate shall deliver seminar during the session, on selected topics of current research interest as reported in the research journals in the field of Cosmetic Technology. The candidate shall deliver seminar after completion of dissertation work.

**Viva-Voce :**

Viva-voce shall be based on dissertation work.

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