

S-30th May, 2015 AC after Circulars from Circular No.1 & onwards

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY**CIRCULAR NO.ACAD/SU/Sci./B.Sc. & M.Sc. Syll./5/2015**

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Science the Academic Council at its meeting held on 30-05-2015 has accepted the **revised semester-wise syllabi as mentioned against their names in the Faculty of Science as under :-**

| Sr. No. | Name of the Subject | Semester |
|---------|---|----------|
| [1] | B.Sc. Computer Science Degree Course | III & IV |
| [2] | B.Sc. Information Technology Degree Course | III & IV |
| [3] | B.C.A. Science Degree Course | III & IV |
| [4] | B.Sc. Animation Degree Course | III & IV |
| [5] | B.Sc. Bioinformatics Degree Course | III & IV |
| [6] | B.Sc. Computer Science [Optional] | III & IV |
| [7] | B.Sc. Information Technology [Optional] | III & IV |
| [8] | B.Sc. Computer Applications [Optional] | III & IV |
| [9] | B.Sc. Computer Maintenance [Optional] | III & IV |
| [10] | B.Sc. Environmental Science [Optional] | V & VI |
| [11] | B.Sc. Bio-Chemistry [Optional] | V & VI |
| [12] | B.Sc. Forensic Science Degree Course | V & VI |
| [13] | B.Sc. Industrial Chemistry [Optional] | V & VI |
| [14] | B.Sc. Electronics [Optional] | V & VI |
| [15] | B.Sc. Zoology [Optional] | V & VI |
| [16] | B.Sc. Microbiology [Optional] | V & VI |
| [17] | B.Sc. Instrumentation Practice [Optional] | V & VI |
| [18] | B.Sc. Statistics [Optional] | V & VI |
| [19] | B.A. Statistics [Optional] | V & VI |
| [20] | B.A. / B.Sc. Mathematics [Optional] | V & VI |
| [21] | B.Sc. Home Science Degree Course | V & VI |
| [22] | B.Sc. Textile Interior Decoration Degree Course | V & VI |
| [23] | B.Sc. Fishery Science [Optional] | V & VI |
| [24] | B.Sc. Dairy Science & Technology [Optional] | V & VI |
| [25] | B.Sc. Botany [Optional] | V & VI |
| [26] | B.Sc. Physics [Optional] | V & VI |
| [27] | M.Sc. Computer Science | III & IV |
| [28] | M.Sc. I.T. | III & IV |

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/SCI./
2015/3761-4160
Date:- 16-06-2015.

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Director,
Board of College and
University Development.

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S-30th May, 2015 AC after Circulars from Circular No.1 & onwards

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Copy forwarded with compliments to:-

- 1] The Principals, affiliated concerned colleges,
Dr. Babasaheb Ambedkar Marathwada University

Copy to :-

- 1] The Controller of Examinations,
- 2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
- 3] The Superintendent, [B.Sc. Unit],
- 4] The Superintendent, [M.Sc. Unit],
- 5] The Programmer [Computer Unit-1] Examinations,
- 6] The Programmer [Computer Unit-2] Examinations,
- 7] The Record Keeper.

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**DR. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD.**




Revised Syllabus of
B.Sc. [Dairy Science & Technology]
Semester – V & VI (Optional)
(Effective from 2015-16 & onwards)

PWA before

A.C.

J. S. Chavan
15.15-


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**B.Sc. Third Year
(Dairy Science & Technology)
Semester V & VI
Objectives**

The course is planned to acquaint the student with:

- i) Animal reproduction practices in dairy farm.
- ii) Breeding practices in dairy farm.
- iii) Manufacturing technology of Ice-cream and frozen desserts.
- iv) Fat rich dairy products and their manufacture at industrial level.
- v) Production of condensed and dried milks.
- vi) Food safety and quality assurance.

B.Sc III Year (Semester – V)
Dairy Science & Technology
Paper - XV

Title: Animal Reproduction & Artificial Insemination

| Sr.No. | Topics | Max Marks: 50 |
|--------------|---|----------------|
| | | No. of Periods |
| 1. | Study of reproductive system of cattle. | 06 |
| 2. | Growth, Puberty Gametogenesis,- a) Growth- Definition, Factor affecting growth. b) Puberty- Definition, factor affecting growth. c) Gametogenesis- Definition, types. | 04 |
| 3. | Study of Oestrus cycle- Definition, Hormones in reproduction & stages of Oestrus cycle. | 04 |
| 4. | Ovulation, Fertilization & Implantation. a) Ovulation:- Definition , process. b) Fertilization:- Definition , Stages c) Implantation. | 04 |
| 5. | Gestation and Pregnancy Diagnosis:- a) Types and functions of Placenta b) Length of Gestation in farm animals c) Pregnancy diagnosis-Definition, importance & methods of Pregnancy diagnosis. | 05 |
| 6 | Parturition- Definition Signs & Stages of parturition. | 03 |
| 7 | Artificial Insemination- a) Definition b) Advantages & Disadvantages c) Methods of collection of semen d) Evaluation of Semen e) Dilution of Semen f) Preservation of Semen g) Present status of Artificial Insemination in India. | 12 |
| 9. | Bio-techniques in Animal Reproduction a) Technique of A.I. b) Super Ovulation c) Oestrus Synchronization d) Embryo Transfer Technique e) Cloning | 10 |
| Total | | 48 |

| | | |
|--|---|-----------|
| | <ul style="list-style-type: none"> e) Uses of cream | |
| | <ul style="list-style-type: none"> B) Butter <ul style="list-style-type: none"> a) History b) Definition, composition & types of butter. c) Method of manufacturing. d) Factor affecting fat losses in butter milk. e) Theories of churning. f) Butter churn. g) Defect, their causes & prevention h) Continuous butter making machine (CBMM) i) Comparison of desi and table butter | 10 |
| | <ul style="list-style-type: none"> C) Butter Oil <ul style="list-style-type: none"> a) Composition b) Method of manufacturing c) Distribution& uses | 05 |
| | Total | 48 |

B.Sc III Year (Semester – V)
Dairy Science & Technology
Practical Paper - XVII
Animal Reproduction & artificial insemination

Max Marks: 50

| Sr.No. | Topics |
|--------|--|
| 1. | Study of reproductive system of cow. |
| 2. | Study of reproductive system of bull. |
| 3 | Study of section slides of spermatogenesis and oogenesis |
| 4. | Collection of semen by A.V. method |
| 5. | Examination of semen. |
| 6. | Preparation of semen dilutor / extender. |
| 7. | Study of Insemination technique by recto-vaginal method. |
| 8. | Detection of heat/ estrus in farm animals. |
| 9. | Pregnancy Diagnosis by rectal palpation method. |
| 10. | Project work. |
| 11 | Visit to A.I. centre. |

B.Sc III Year (Semester – V)
Dairy Science & Technology
Practical Paper - XVIII
Ice-cream & fat rich dairy product

Max Marks: 50

| Sr. No. | Topics |
|---------|---|
| 1. | Study of ice-cream freezer. |
| 2. | Calculation of ingredient in ice-cream mix. |
| 3. | Manufacturing of soft serve plain & fruit flavored ice-cream. |
| 4. | Determination over-run in ice-cream. |
| 5. | Preparation of kulfi. |
| 6. | Separation of ice-cream. |
| 7. | Study of butter churn & Butter making equipment. |
| 8. | Manufacturing of table butter & white butter. |
| 9. | Manufacturing of butter oil. |
| 10. | Project work. |
| 11. | Visit to ice-cream plant. |

B.Sc III Year (Semester – VI)
Dairy Science & Technology
Paper - XIX
Title: Genetics and animal breeding

Max Marks: 50

| Sr. No. | Topics | No. of Periods |
|--------------|--|----------------|
| 1. | Genetics 1) Terminology used in genetics 2) Cell-division---mitosis & meiosis 3) Mendel's law of inheritance a) Monohybrid :- Law of segregation b) Di-hybrid :- Law of independent assortment c) Modified di-hybrid crosses. 4) Mutation: a) Definition. b)stages at which mutation occur c) probable agencies inducing mutation d) types of mutation e) effect of mutation 5) Variation: a) Definition b) causes of variation 6) Sex chromosome, sex linkage, Sex determination, sex linkage inheritance & sex limited inheritance, multiple alleles. 7) Gene, their functions, additive and non-additive gene action | 22 |
| 2. | Animal Breeding A) Fertility and sterility a) Fertility: Definition, breeding efficiency, factor affecting breeding efficiency. b) Sterility, Definition, causes of sterility. B) Selection a) Choosing traits for selection b) Heritability c) Selection methods d) Effect of selection C) Systems of animal breeding: a) Principles & progress of animal breeding. b) Inbreeding-definition, methods. c) Out breeding-definition, methods d) Effect of inbreeding on growth, production & reproduction e) Adaptability of cross breeds in tropics. f) New breeds develop by cross breeding in India. | 24 |
| Total | | 46 |

B.Sc III Year (Semester – VI)
Dairy Science & Technology
Paper - XX
Title: Condensed, Dried milks and by-products

| Sr. No. | Topics | Max Marks: 50 |
|--------------|---|----------------|
| | | No. of Periods |
| 1 | Condensed and evaporated milks: a) History, Status and scope. b) Types, Definitions, Composition, Boiling point c) Manufacturing of Evaporated & Condensed milk. d) Seeding, crystallization & cooling of condensed milk. e) Heat stability & its control. f) Defects in evaporated & condensed milk, their causes & prevention. g) Uses of evaporated & condensed milks. | 16 |
| 2 | Dried milks: a) History status & scope b) Water activity & sorption isotherms c) Types, composition, PFA/BIS and international standards d) Principle of drum, spray & freeze drying. e) Manufacturing of skim milk powder(SMP), whole milk powder (WMP) f) Physico-chemical properties of dried milks g) Instantiation h) Defect and its prevention in SMP and WMP i) Infant milk food formulae, malted milk foods and dairy whitener | 16 |
| 3 | By-products a) Status, Scope and utilization of dairy by-product in India. b) Whey beverages & whey protein concentration (NPC) c) Butter milk & its uses. d) Casein: Industrial and food grade & its uses. e) Lactose & its uses. | 12 |
| 4 | Introduction to food safety & quality assurance: a) International organization for standards (ISO) b) Total Quality management (TQM) c) Hazard analysis critical control point (HACCP) d) Good Manufacturing practices (GMP) | 06 |
| Total | | 48 |

B.Sc III Year (Semester – VI)
Dairy Science & Technology
Practical Paper - XXI
Title: Genetics and animal breeding

Max Marks: 50

| Sr. No. | Topics |
|---------|--|
| 1. | Judging of dairy cattle. |
| 2. | Estimation of Gene Frequency |
| 3. | Estimation of genotype frequency |
| 4. | Estimation of most probable producing ability in cow |
| 5. | Estimation of breeding efficiency of cow |
| 6. | Breed selection and Breeding |
| 7. | Study of Breeding records |
| 8. | Project work |
| 9. | Visit cattle breeding farm |

B.Sc III Year (Semester – VI)
Dairy Science & Technology
Practical Paper – XXII
Title: Condensed, dried milks and by-products

Max Marks: 50

| Sr. No. | Topics |
|---------|--|
| 1 | Study of vacuum pan |
| 2 | Determination of heat stability of milk |
| 3 | Manufacturing of condensed & evaporated milk |
| 4 | Study of Drum Dryer |
| 5 | Study of Spray drying plant |
| 6 | Manufacturing of skim milk & whole milk powder |
| 7 | Determination of Solubility Index (SI) |
| 8 | Determination of partial & bulk density of dried milks |
| 9 | Preparation of whey beverages |
| 10 | Preparation of casein |
| 11 | Project work. |

Reference Books

- 1) A Text book of Animal Husbandry By – G.C. Banarjee.
- 2) Milk and milk products..... Eckles, Comb and Mary.
- 3) Milk and Milk Products..... Harbonsing and Moore.
- 4) Modern Dairy Products By Lampert.
- 5) Dairy India Year Book-2007 by – P.R. Gupta.
- 6) Dairy Plant Engineering and Management by Tufail Ahmed.
- 7) Handbook of Dairy Science.....by K.C. Mahanta
- 8) Outline of Dairy Technology by..... Sumumar De.
- 9) Milk Product in India M.R. Shrinivasan & C.P. Anantkrishnan
- 10) Dairy Technology and Engineering by H.G Kessler
- 11) Ice-Creamby W.S. Arbuckle
- 12) Dairy Processing by Earl.
- 13) Technology of Indian milk products- by R.P.Aneja, B.N.Mathur
R.C. Chandan & A.K. Banerjee.
- 14) Introduction to food safetyIGNOU, New Delhi.
- 15) Food safety & Quality Assurance – IGNOU, New Delhi.
- 16) Hazards to food SafetyIGNOU, New Delhi.
- 17) Reproduction in farm animalsC.N. Sane & Other.
- 18) Hand Book of Indian Dairy Farmers.....Patrick John.
- 19) A Textbook of Genetics.....Dalela R.C. & S.R. Varma.
- 20) Genetics and Breeding in farm animals..... Banerjee & Mukharjee.
- 21) Reproduction in farm animals..... Hafeez.
- 22) Hand Book & Physiology of farm animalsR.D. Frandson.
- 23) Anatomy & Physiology of farm animalsR.D. Frandson.
- 24) Principals of Dairy ScienceG.H. Schmidt, L.D.Vivek & N.N.
Pathak.
- 25) Genes and EvolutionJHA.
- 26) Cattle embryo transfer procedure..... Curtis.
- 27) Genetics of Live stock Improvement.....John F. Lesley.
- 28) An Introduction to Genetics.....B.K. Jain.
- 29) Population Genetics in animal breeding..... Franz pitcher.


Dr V.V. Niras
Chairman