



**B. A. COLLEGE OF AGRICULTURE
ANAND AGRICULTURAL UNIVERSITY
ANAND - 388 110**

Read : Resolution of 54th Meeting of the Academic Council held on 27-08-2020,
Anand Agricultural University, Anand vide Item No. 54.9

**Revision in the PG Syllabus AGM 607,
Mathematics in Agriculture and Biology (2+1)**

NOTIFICATION

It is hereby notified to all concerned that vide Item No. 54.9 of the 54th meeting of Academic Council held on 27-08-2020, the Academic Council resolved as under:

"The Academic Council approves the revised syllabus of AGM 607, Mathematics in Agriculture and Biology (2+1) as per the Appendix-I for M.Sc. and Ph.D. Programmes in Agriculture Faculty w.e.f. Academic Year 2020-21.

No. AAU/BACA/PGT/ 2904 /2020
ANAND, 16/09/2020


**PRINCIPAL & DEAN
FACULTY OF AGRICULTURE**

Copy F.W.Cs. to:

- (1) All members of Academic Council of this University
- (2) All officers of this University
- (3) All Deans and Principal of this University
- (4) Unit/Sub Unit Officers of this University

Copy to:

- (1) P.S. to Vice Chancellor, Anand Agricultural University
- (2) Office of Registrar, Academic & Exam Branch(s) / Legal Branch (10 copies)

REVISION IN PG SYLLABUS

AGM 607 MATHEMATICS IN AGRICULTURE AND BIOLOGY (2+1)

UNIT I

Functions: function of a single real variable; single-valued and many-valued functions; linear functions; power functions; polynomial functions; trigonometric, exponential and logarithmic functions; functions of several real variables.

UNIT II

Differentiation: derivative of the function of a single variable; derivatives of the functions of several variables-partial derivatives; maxima and minima; applications.

UNIT III

Integration: integrals of functions with respect to their independent variables; indefinite, definite and infinite integrals, applications.

UNIT IV

Ordinary differential equations: classification; solution of linear differential equations; applications; partial differential equations - classification, applications.

UNIT V

Vectors: rules of the game with the vectors; applications; matrices and determinants: characterization; rules of the game with matrices and determinants; systems of linear algebraic equations and their solutions; characteristic roots of matrices; applications.

UNIT VI

REVISED

Data and Predicting Functions:

Interpolation & Extrapolation within the data:

Numerical Methods: Finite Differences and Interpolation: Finite Differences, Forward, Backward and Central operators, Interpolation by polynomials: Newton's forward, Backward interpolation formulae, Gauss & Stirling's central difference formulae, Newton's divided and Lagrange's formulae for unequal intervals, Trapezoidal and Simpson's formulae.

Stochastic methods, Fourier Analysis

UNIT VII

Probability: probability and probability distributions; applications. Practical • Use of simple log and semi-log graph papers • Use of logarithms and logarithmic tables • Plotting linear and log graph • Trigonometric functions and relations • Data representation as pie, bar and histograms • Statistical data analysis-averages, standard deviations, simple correlation coefficient.

REVISED**Practical:**

- Introduction to MATLAB
- Use of symbolic tool box of MATLAB to solved Trigonometric & calculus problems including two & three dimensional graphs and data representations as pie, bar and histograms.
- Use of statistical toolbox of MATLAB in statistical data analysis like averages, Standard Deviations, Correlation Coefficients etc.

Suggested Readings:

Arya JC & Lardner RW.1979. Mathematics for Biological Sciences. Prentice Hall. Bishnoi OP. 2007. Principles of Agricultural Meteorology. Oxford Book Co. Crank J, Martin HG & Melluish DM. 1980. Mathematics for Biological Sciences, Oxford Univ. Press. Eason G, Coles C, Wand Gettinby G. 1980. Mathematics and Statistics for Biosciences, Ellis Harwood Ltd. Francis 1983. Theory and Problems of Numerical Analysis. McGraw Hill. Hann CT. 1995. Statistical Methods in Hydrology. East-West Press. Panse VG & Sukhatme PV. 1983. Statistical Methods for Agricultural Workers. ICAR. Ramachery SKVS, Bhujanga Rao M & Bhandari S. 2000. Engineering Mathematics. IBS Publ. Ray M & Sharma HS. 1970. Mathematical Statistics. Ram Prasad & Sons. Vashistha AR. 1991. Modern Algebra. Krishna Prakashan Mandir.

E. Kreyszig, Advanced Engineering Mathematics (8th Edition), John Wiley (1999)

BS Grewal, Higher Engineering Mathematics (44th Edition), Khanna Publishers.