To

1. Director/Project Director/NRC/Bureaus of all ICAR Institutes.
2. Vice Chancellor / Dean of all the Agricultural Universities.
3. Director, State Deptts. of Agril./Animal Husbandry/Fisheries.
4. Embassies of SAARC Countries.

Subject: Senior Certificate Course (Agricultural Statistics and Computing) from June 10 to November 23, 2019

Sir,

The Institute would be conducting the Senior Certificate Course (Agricultural Statistics and Computing) from June, 2019 for the benefit of employees of research Institutes of the Council, State Agricultural Universities, State / Union Territory Government Deptts. of Agriculture, Animal Husbandry, Fisheries etc and other research organisations and for SAARC Countries. This programme is designed to equip the participants with the statistical techniques as well as use of computers and software packages.

The course is scheduled to be conducted during the period June to November, 2019. This course would comprise of two independent modules of about three months duration each consisting of two/three paper(s).

**Module I**

<table>
<thead>
<tr>
<th>Paper I</th>
<th>June 10 - August 27, 2019</th>
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<tr>
<td>Statistical Methods and Official Agricultural Statistics</td>
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<tr>
<td>Use of Computers in Agricultural Research</td>
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| Paper II | |
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Director

P.S./No. 11(1)/2019-TAC

दिनांक/Date: 26.04.2019
Module II  September 6 - November 23, 2019

Any three of the following paper(s) in applied areas:

Paper III  Sampling Techniques
Paper IV  Econometrics and Forecasting Techniques
Paper V  Design of Experiments
Paper VI  Statistical Genetics

Officers sponsored for this course can be nominated either for only one module thereof or both the module(s) of their choice.

The details of course contents, eligibility, qualification etc. are given in the Annexure (Enclosed).

Kindly nominate suitable candidates from your Deptt. / Organization to participate in the ensuing course. It may kindly be noted that the nominated officer(s) is /are relieved of duties for participating in this course only after the receipt of a firm formal / written communication from this Institute regarding his / their selection.

Nomination form(s) duly completed may be sent to the undersigned on or before May 25, 2019 by E-mail: director.iasri@icar.gov.in / tac.iasri@icar.gov.in or FAX No. 91-011-25841564 to help avoid delays. Nomination form can be downloaded from Institute web site: http://www.iasri.res.in. For any clarification / query, Dr. Seema Jaggi, Incharge Training Administration Cell, ICAR-IASRI (seema.jaggi@icar.gov.in) may be contacted.

I would like to add further that TA/DA of the participants have to be borne by the Sponsoring Institutions. Further, the boarding and lodging charges at ICAR-IASRI, New Delhi would also be borne by the participants themselves. However, the participants from India are likely to be accommodated in the Guest House of the Institute @ Rs.50/- per day basis.

Yours faithfully,

(L.M. Bhar)
## ANNEXURE

<table>
<thead>
<tr>
<th><strong>Name of the Course</strong></th>
<th>Senior Certificate Course (Agricultural Statistics and Computing)</th>
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<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>The duration of the Course is 6 months from (June 10 – November 23, 2019)</td>
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<tr>
<td></td>
<td>This course would comprise of two independent modules of three months duration each i.e.</td>
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</table>
|                        | Module I  June 10 – August 27, 2019  
Module II  September 06 – November 23, 2019. |
| **Eligibility**        | Degree in Science/Agriculture or allied fields with working knowledge of Mathematics and handling of Statistical Data. Only those candidates with sufficient knowledge of Statistical Methods and Computer Use may be directly admitted to Module II. |
| **Number of Seats**    | 04 |
| **Course**             | The Course consists of Lectures, Practicals and Use of Personal Computers. There will be both theory and practical examination in each paper. The detailed syllabus is given in the Annexure. |
| **Fees**               | A nominal fee of Rs.8000/- per participant per module from India, US $ 500 per participant per module from SAARC countries and US $ 1000 per participant per module from other countries. Fee is payable at the beginning of each module in the form of Bank draft or online payment in favor of Director, IASRI payable at New Delhi. |
| **Examination**        | The candidates will be required to appear in the examination at the end of each module. Those who successfully qualify will be awarded certificates for each module. Those candidates who complete both the modules will be awarded the course certificate |
| **Boarding and Lodging** | Guest House accommodation is available at the Institute premises. The charges for the same is Rs.50/- per day for Indian, Rs 150/- per day for SAARC countries and Rs. 300/- per day for other countries participants. |
DETAILED SYLLABUS

Module - I  June 10 - August 27, 2019
Paper-I  Statistical Methods and Official Agricultural Statistics

Statistical Methods
Descriptive Statistics: Compilation of data, Frequency distributions, Scatter diagram, Graphs, Charts, 3-D charts, Use of Computer-Graphic display of data, Measures of Central tendencies and dispersions.


Concepts of regression and correlation, Method of least squares, Multiple regression and Multiple correlation, Partial regression and Partial correlation. Estimation and Hypothesis testing: Concepts of point estimation and confidence intervals, Hypothesis testing, Simple hypothesis, Composite hypothesis, Tests based on Chi-square, t and F, ANOVA.

Agricultural Statistics

Paper-II  Use of Computers in Agricultural Research

Computer Fundamental – Number systems; Functional units of computer, I/O devices, primary and secondary memories.
Software – System software and Application software, Introduction to Windows and MS Office.
Programming Fundamentals with C++ - Algorithm development, techniques of problem solving, flowcharting, stepwise refinement; Representation of integer, character, real, data types; constants and variables; Arithmetic expressions. Assignment statement, logical expression; Looping and Decision Making Constructs; Arrays; Concepts of Object Oriented Programming, Encapsulation, Inheritance, Polymorphism; Functions; Classes and Objects; String Processing. Networking fundamentals.
Internet basics.
Concepts of Data Base Management System.
Module-II  September 06, 2019 to November 23, 2019

Any three of the following papers in applied areas.

Paper-III  Sampling Techniques


Two stage sampling (equal and unequal units at both stages). Systematic sampling, Double sampling. Sampling on successive occasions, Non-sampling errors- Planning and organisation of sample surveys.

Problems in organizing and conduct of pilot and large scale sample surveys. Details of surveys conducted by the Institute.

Paper-IV  Econometrics and Forecasting Techniques

Econometrics

Maximum likelihood estimation.

Concepts of multicollinearity, heteroscedasticity and autocorrelation, Durbin – Watson test, lagged variables, Dummy variables and index numbers.

Forecasting Techniques
Forecast models using weather variables – regression approach; Forecast models using plant characters – between year models, regression approach, within year models, probability models; Agro meteorological models using stress index, water requirement satisfaction index; Time series models; Forewarning of pests and diseases, Forecasting fish production; application of remote sensing techniques in forecasting.
Paper – V  Design of Experiments


Paper – VI  Statistical Genetics

Mendel’s laws, Linkage, sex-linked and sex-limited inheritance, Multiple alleles, Detection and estimation of linkage. Inheritance of characters showing continuous variation, Multiple factor hypothesis, components of variation, estimation of heritability, response to selection, indirect selection, Progeny row trials and compact family block designs. Use of Discriminant function for selection. Progeny testing and sire evaluation. Elements of population genetics, Hardy-Weinberg law, inbreeding and its effects.
ICAR-INDIAN AGRICULTURAL STATISTICS RESEARCH INSTITUTE
LIBRARY AVENUE , PUSA, NEW DELHI : 110 012.

NOMINATION FORM : Senior Certificate Course (Agril. Statistics & Computing)

1. Module of the course for which nominated (Please tick) [Module I] [Module II] [Both]
2. Name (in Block Letters)
3. Date of Birth/Age
4. Basic Pay and Scale of Pay
5. Official Address
6. Telephone Number/
   Telegraphic Address, if any
7. Residential Address
8. Educational Qualifications
   Degree    University    Subjects    Year
9. Total Experience
   Post held    Orgn./Office    From    To
10. Have you attended any course organised by this Institute previously. If yes give details: Yes/No
11. Number of Bank Draft and name of the Bank

SIGNATURE OF NOMINEE

Remarks of Sponsoring Authority :

Certified that the candidate is employed by our Deptt./Organisation and on return from the training he will be suitably employed so that his training is best utilised. The candidate would abide by all rules regulations of the Institute.

SIGNATURE OF SPONSORING AUTHORITY

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