INDIAN STATISTICAL INSTITUTE

PROSPECTUS
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UNITY IN DIVERSITY

203 BARRACKPORE TRUNK ROAD
KOLKATA 700 108

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INDIAN STATISTICAL INSTITUTE

1   Introduction

The Indian Statistical Institute (I.S.I.), founded by Professor Prasanta Chandra Mahalanobis, grew out of the Statistical Laboratory set up by him in the Presidency College in Kolkata. In 1932, the Institute was registered as a non-profit making learned society for the advancement of statistics in India. Within a few years, the Institute's achievements in research that included innovative projects on sample surveys of agricultural crops and socio-economic effects of the Bengal famine (1943-44) as well as path-breaking research publications of Professor R.C. Bose on experimental designs in the Annals of Eugenics (1939), brought recognition in India and abroad. The Institute is now considered as one of the foremost centres in the world for training and research in statistics and related sciences. Under the leadership of Professor P. C. Mahalanobis, the Institute also initiated and promoted the interaction of statistics with natural and social sciences to unfold the role of statistics as a key technology which explicated the twin aspects of statistics - its general applicability and its dependence on other disciplines for its own development. In keeping with this long tradition, the Institute has been engaged in developing statistical theory and methods and their practical applications in various branches of science and technology.

The major objectives of the Institute, as stated in its Memorandum, are

(a) to promote the study and dissemination of knowledge of statistics, to develop statistical theory and methods, and their use in research and practical applications generally, with special reference to problems of planning of national development and social welfare;

(b) to undertake research in various fields of natural and social sciences with a view to the mutual development of statistics and these sciences;

(c) to provide for, and undertake, the collection of information, investigation, projects and operational research for purposes of planning and the improvement of efficiency of management and production.

The Institute has its headquarters in Kolkata, four centres at Delhi, Bangalore, Chennai and Tezpur, and a branch at Giridih. In addition, the Institute has a network of units of Statistical Quality Control and Operations Research at Baroda, Coimbatore, Hyderabad, Mumbai and Pune engaged in guiding the industries, located within and outside India, in developing the most up-to-date quality management systems and solving critical problems of quality, reliability and productivity.

The Institute has a distinguished faculty as well as an excellent library and modern computer facilities. A large number of Indian statisticians and probabilists who have won international fame have been students, research scholars or faculty members at the Institute. The Abel laureate Prof. S. R. S. Varadhan received his Ph. D. degree from the Institute in 1963. The Institute has several well-known statisticians, mathematicians, computer scientists, economists and scientists in other fields, among whom are fellows of many distinguished scientific societies in India and abroad and recipients of S. S. Bhatnagar Prize, G.D. Birla Award for Scientific Research, Mahalanobis Memorial medals.

The Institute has acquired a special distinction in India for its activities since 1950 relating to collection and analysis of information on social, economic and demographic characteristics in

India through the National sample surveys. It may be mentioned that in 1954, Pandit Jawaharlal Nehru, the first Prime Minister of India, entrusted Professor Mahalanobis and the Institute with the responsibility of preparation of the Draft Second Five-Year Plan of the country. This draft and the planning models formulated by the Institute under the guidance of Professor Mahalanobis have since been regarded as major contributions to economic planning in India. During these years eminent economists including Nobel laureates visited the Institute and interacted with Professor Mahalanobis. The Institute has a long tradition of collaborating with eminent statisticians, mathematicians and other scientists from all over the world and having their active participation in its teaching and research programmes. Sir Ronald A. Fisher was a frequent visitor. Professor J.B.S. Haldane joined the Institute in the late fifties and worked in the Institute for several years. Renowned scientists and Nobel Laureates have been visiting the Institute quite often. Sankhya, the Indian Journal of Statistics, published by the Institute since 1933, has grown into a leading journal in statistics.

The Institute has been offering formal courses in statistics leading to certificates and diplomas since the late thirties. During 1950s the interdisciplinary nature of teaching in the Institute was evolved through the guidance of stalwarts along with the encouragement of Professor Satyendra Nath Bose who was the President of the Institute for a long period of time. Post-M.Sc. advanced course in statistics was started in the late forties. In 1959, in recognition of the importance of the Institute in the development and application of statistics, the Parliament of India enacted the Indian Statistical Institute Act, declaring it an Institution of National Importance and empowering it to grant degrees and diplomas in statistics. The Indian Statistical Institute Act was amended in 1995 empowering it to grant degrees and diplomas in statistics, mathematics, quantitative economics, computer science and such other subjects related to statistics as may be determined by the Institute from time to time.

The B.Stat.(Hons.) and the M.Stat. degree programmes in statistics were introduced in the Institute in the year 1960 with the philosophy that the academic training of a statistician should encompass the basic principles of statistics along with its theoretical and methodological development, not merely in abstract formulation, but also in relation to concrete problems arising from natural and social sciences. The curricula for these degree programmes were developed accordingly. The Institute also introduced research programmes leading to the award of Ph.D. degrees from the Institute. A one-year Diploma in Computer Science was started in the Institute in 1966. This was upgraded to a two-year Diploma in 1978 which evolved into the M.Tech.(CS) degree in 1981, the first M.Tech. course in computer science in India.

In the early fifties the Institute initiated the use of Statistical Quality Control and Operations Research (SQC & OR) in India by organizing a visit of Professor W. A. Shewart in 1948 and later by inviting other eminent experts. The SQC promotional work gradually began to spread all over the industrial centres in India under a comprehensive programme covering education, theoretical and applied research, practical training in industry and consultation work. The Institute is regarded as the pioneer of the scientific quality control movement in India. It is also credited with introducing in India, the first of its kind, a formal Post Graduate Diploma course in SQC and OR in sixties. This was upgraded to a M.Tech. degree course in Quality, Reliability and Operations Research in 1989.

Some of the new degree courses that have been introduced by the Institute in past 15 years are: (i) Master of Science degree in Quantitative Economics [M.S.(QE)] (in 1996-97), (ii) Bachelor degree in Mathematics (Honours) [B.Math.(Hons.)] (in 2000-01) and (iii) Master degree in Mathematics [M.Math.] (in 2003-04). The Institute has been offering a course leading to

Associateship in Documentation and Information Science at the Bangalore Centre since 1965-66. Since 2008-09, this course has been upgraded to a Master's level course, called the Master of Science in Library and Information Science [M.S. (LIS)].

The International Statistical Education Centre, established in the Institute in 1950, is run by the Indian Statistical Institute under the auspices of the Government of India. This Centre has been providing training in Statistics to sponsored students mainly from Asia, Africa and the Far East. The Centre also offers various short-term courses in statistics and related subjects.

The Institute has been using computers since the early fifties. The Electronic Computer Laboratory of the Institute was established in 1950. The first electronic computer in India, an HEC-2M, was installed in the Institute in 1956. In 1961, the Institute, in collaboration with Jadavpur University, undertook the design, development and fabrication of a fully transistorized digital computer, called ISIJU-1, which was commissioned in 1966. At present, the computing facility in the Institute includes several state of the art computer systems. The Computer Science faculty is among the finest in the country.

The Central Library of the Institute is located at Kolkata with a network extending to two major libraries at Delhi and Bangalore Centres and other locations of the Institute. Since the inception of the Institute on 17 December 1931, the Central Library has been playing a pivotal role and over the years, it has attained the distinction of having one of the richest collections in the country particularly in the fields of statistics and the related disciplines, viz. Computer Science & Electronics, Earth Science, Economics, Life Science, Mathematics, Physics, Quality Control. In addition to a total volume of more than three lakhs comprising books, bound journals, official reports/data-books, dissertations and theses, reprints, non-print materials such as CDs/floppies, microfilms and microfiches, it maintains online access to journals and all the major scientific publication data bases. It has also a separate NBHM collection funded by National Board for Higher Mathematics, Department of Atomic Energy, Govt. of India. It is making endeavours to create Institutional repositories using open source software facilitating access to indigenous resources across regions and increasing the visibility of such resources. As a part of the Central Library, the renovated *Amrapali* building which was the residence of the founder of the Institute, now houses P.C. Mahalanobis Memorial Museum and Archives.

Most of the research and teaching activities of the Institute takes place in three campuses located in Kolkata, Delhi and Bangalore. Each of these three campuses has hostels for students, residential quarters for the faculty and a guest house, and also recreational and medical facilities. At each of these three campuses, there are a large number of scientists in theoretical and applied statistics, statistical quality control and operations research, mathematics and economics. In Kolkata, there is also a large group of scientists in Computer and Communication Sciences and other branches of natural and social sciences. The Institute is engaged in significant research activity in many other disciplines, such as, population studies, physics, agricultural and ecological sciences, geology, biological anthropology, human genetics, linguistics, psychometry and sociology. Moreover, in the Bangalore Centre, there are a number of scientists working in Information Science. In all these disciplines, much emphasis is given on inter-disciplinary research and collaborative work with the statisticians of the Institute. The Institute thus conjures a symbiosis of pure, applied and interdisciplinary research involving various areas of statistics, mathematics, quantitative economics, computer science, other natural and social sciences, statistical quality control and managerial decision making. This has been reflected in the research, teaching and training programmes of the Institute.

Research Divisions and Units of ISI

Applied Statistics Division
- Applied Statistics Unit (ASU), KOLKATA
- Bayesian and Interdisciplinary Research Unit (BIRU), KOLKATA

Biological Sciences Division
- Agricultural and Ecological Research Unit (AERU), KOLKATA
- Biological Anthropology Unit (BAU), KOLKATA
- Human Genetics Unit (HGU), KOLKATA

Computer and Communication Sciences Division
- Advanced Computing and Microelectronics Unit (ACMU), KOLKATA
- Computer Vision and Pattern Recognition Unit (CVPR), KOLKATA
- Documentation Research and Training Centre (DRTC), BANGALORE
- Electronics and Communication Sciences Unit (ECSU), KOLKATA
- Machine Intelligence Unit (MIU), KOLKATA
- Systems Science and Informatics Unit (SSIU), BANGALORE

Physics and Earth Sciences Division
- Geological Studies Unit (GSU), KOLKATA
- Physics and Applied Mathematics Unit (PAMU), KOLKATA

Social Sciences Division
- Economic Analysis Unit (EAU), BANGALORE
- Economic Research Unit (ERU), KOLKATA
- Linguistic Research Unit (LRU), KOLKATA
- Planning Unit (PU), DELHI
- Population Studies Unit (PSU), KOLKATA
- Psychology Research Unit (PRU), KOLKATA
- Sociological Research Unit (SRU), GIRIDIH
- Sociological Research Unit (SRU), KOLKATA

Statistical Quality Control and Operations Research Division
- SQC & OR Unit (SQC&OR), BANGALORE
- SQC & OR Unit (SQC&OR), CHENNAI
- SQC & OR Unit (SQC&OR), DELHI
- SQC & OR Unit (SQC&OR), KOLKATA
- SQC & OR Unit (SQC&OR), HYDERABAD

Theoretical Statistics and Mathematics Division
- Theoretical Statistics and Mathematics Unit (SMU), BANGALORE
- Theoretical Statistics and Mathematics Unit (SMU), DELHI
- Theoretical Statistics and Mathematics Unit (SMU), KOLKATA

2   Current Academic Programmes

	Programme	Duration	Venue for 2012-2013
Degree	B. Stat. (Hons.)	3 years	Kolkata
	B. Math. (Hons.)	3 years	Bangalore
	M. Stat.	2 years	Kolkata, Delhi & Chennai
	M. Math.	2 years	Kolkata
	M. S. in Quantitative Economics	2 years	Kolkata & Delhi
	M.S. in Library and Information Science	2 years	Bangalore
	M. Tech. in Computer Science	2 years	Kolkata
	M. Tech. in Quality, Reliability and Operations Research	2 years	Kolkata
Diploma / Certificate	Part-time Course in SQC*	6 months	Bangalore & Hyderabad
	Intensive Course in Programming and Application of Electronic Computers*	10 weeks	Kolkata
	Post-Graduate Diploma in Statistical Methods with Applications	1 year	Tezpur
Fellowship	Junior/Senior Research Fellowship	5 years	Kolkata, Delhi Bangalore, Chennai & Hyderabad
Fellowship	Specialist Development Programme in SQC & OR (SDP)*	2 years	Bangalore

*For the academic year 2012-2013, these courses will be notified separately, if offered.

The Institute awards Ph.D./D.Sc. degrees for research in the fields of Statistics, Mathematics, Quantitative Economics, Computer Science, and Quality, Reliability & Operations Research(QROR).

The International Statistical Educational Centre (ISEC) of the Institute runs training programmes in collaboration with the Central Statistical Organization (CSO) of Ministry of Statistics and Programme Implementation, Government of India. The Institute also runs a course for ISS Probationers on behalf of the CSO.

	Programme	Duration	Venue
ISEC Courses	Statistical Training Diploma (Regular Courses)	10 months	Kolkata
	Special courses	1 to 12 months	Kolkata
CSO courses	ISS Probationers' Course in Statistical Methodology	10 weeks	Kolkata and/or Delhi

3 Stipends, Fellowships, Allowances etc.

Deserving non-sponsored students and research fellows admitted to various programmes receive stipends, fellowships and contingency/book grants as given below, and they are not required to pay any tuition fee.

Programme	Stipend/Fellowship per month (in Rs.)	Contingency/ book grant per year (in Rs.)
B. Stat. (Hons.)/B. Math. (Hons.)	3000	3000
M. Stat./M. Math/M.S. in QE/M.S. in LIS	5000	5000
M. Tech. in CS/ M. Tech. in QROR	8000	5000
Post-Graduate Diploma in Statistical Methods with Applications *(NEW)*	2000 $^\$$	2000
Junior Research Fellowship (JRF) Senior Research Fellowship (SRF) (after two years as JRF)	16000/18000* 18000/20000* + H.R.A. as per rules	20000
Special Research Fellowship	20000/24000$^\#$ + H.R.A. as per rules	70000
Research Associateship	22000/23000/24000 +H.R.A. as per rules	20000

$^\#$ after two years; $^\$$ approval awaited;
* Research Fellows with M.E./M.Tech. or equivalent will be entitled to Rs. 18000/- per month as JRF, and Rs. 20000/- per month as SRF.
A Special Research Fellowship may be awarded to outstanding candidates in each of the following subjects: (i) Statistics, (ii) Mathematics, (iii) Computer Science, (iv) Quantitative Economics and **(v) Quality, Reliability & Operations Research.**

Stipends are granted in the first instance for one semester/academic year only. They are renewed periodically if the progress of the student is found satisfactory. **Stipend/Fellowship granted to a student may be reduced or completely withdrawn if the academic progress, attendance in class, or character and conduct of the student are not found satisfactory.** Details of the rules pertaining to this are available in the appropriate Students' Brochure [see **Section 5**]. Students leaving in the middle of a course have to refund the stipend/contingency grant received, if any. At the end of each year/semester, prizes are also awarded for outstanding performance in examinations.

4 Admission Procedure

Admission to the academic programmes is strictly based on the merit of the candidates as judged from their academic records and performance in appropriate selection tests and interviews. The selection tests are held at a number of centres in India. **Section 7** gives details of eligibility conditions and selection tests for the programmes offered. If at any stage of the selection process it is found that a candidate does not satisfy the eligibility conditions, his/her

application will not be processed any further. Eligibility requirements may be relaxed in some cases at the discretion of the Institute.

For admission to all the courses (excluding the Fellowship programmes), the Institute follows a policy (the details of which are given at the website (*http://www.isical.ac.in/~deanweb)* in order to ensure reservation for Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Classes (OBC) and Physically Challenged (PC) categories, as per the policy of the Government of India. The candidates from these reserved categories also enjoy some other benefits in respect of charges, stipend, hostel accommodation and traveling allowance. **SC, ST and OBC candidates will be required to produce the original caste/tribe certificate issued by a competent authority in the prescribed format (see http://www.upsc.gov.in/recruitment/scst.htm & http://www.iitg.ernet.in/jee/OBC_format.htm) . These documents must be produced at the time of interview, failing which they will not be considered for admission. For any category of physical disability (*viz.*, locomotor, visual, speech and hearing), benefit will be given to those candidates who have at least 40% permanent physical impairment in relation to a body part / system / extremity / extremities / whole body etc. The candidates in this category will be required to produce a certificate issued by a competent authority (mentioned in http://nhrc.nic.in/Publications/DisabledRights.pdf) in the prescribed format (see http://upsc.gov.in/recruitment/med-handi.htm). These documents must be produced at the time of interview, failing which they will not be considered for admission.**

The decisions of the Institute in all these matters are final. Canvassing in any form disqualifies a candidate from being selected. The names of candidates called for interview on the basis of the written tests and also of those selected after interview are generally posted on the internet at the site: ***http://www.isical.ac.in/~deanweb.***

If a student fails in a course and is not allowed to repeat, he/she is not eligible for readmission to the same course.

In some programmes there is a provision for employers to sponsor suitable candidates employed by them. Details of this scheme are given separately under the appropriate programmes.

Note **: Sample questions and syllabi for the selection tests for the different courses and fellowship programme are sent to the candidates along with admit cards after the applications are processed. Sample questions of last few years for some of the programme are available at the website *http://www.isical.ac.in/~deanweb*.**

5   Students' Brochure

Details of the courses along with the rules and regulations pertaining to the academic programmes of the Institute are given in the Students' Brochure. Usually, each student is supplied with a copy of the current brochure at the time of admission. A periodically updated version of the Students' Brochure is also available on the internet at the site: **http://www.isical.ac.in/~deanweb** in PDF format.

6   Discipline

The students shall observe the normal discipline of the Institute and shall not indulge in cheating in the examinations, rowdyism or any other act of indiscipline or unlawful/unethical/indecent behaviour. There are also specific attendance requirements that the students are expected to meet, details of which are mentioned in Section 7 under various

Course Descriptions. Violations of these are likely to attract punishments such as withholding promotion/award of degree, withdrawing stipend and/or expulsion from the hostel/Institute.

Ragging is banned in the Institute and any one found indulging in ragging will be given punishment such as expulsion from the Institute, or, suspension from the Institute/ classes for a limited period and fine. The punishment may also take the shape of

(i) withholding Stipend/Fellowship or other benefits,

(ii) withholding results,

(iii) suspension or expulsion from hostel and the likes.

Further, if any incident of ragging comes to the notice of the authority, the concerned student shall be given liberty to explain, and if his/her explanation is not found to be satisfactory, the authority would expel him/her from the institute. Local laws governing ragging are also applicable to the students of the Institute. Incidents of ragging may be reported to the police.

7   Description of Academic Programmes and Methods of Selection

For all the regular degree courses the following schedule is usually maintained. The Academic Year is divided into two semesters separated by a short break. The first semester (Semester I) for all the courses usually starts in July and ends in December. The second semester (Semester II) starts in January and, for all the courses other than the two M.Tech. courses, it usually ends in May. For the M.Tech.(CS) course, Semester II, which includes summer training, usually ends in July while for the M.Tech.(QROR) course Semester II usually ends in July after the field training.

Classes are held on weekdays (Monday to Friday) during 9:30/10 a.m. to 6 p.m. unless mentioned otherwise.

A brief account of the various courses offered by the Institute is given below. Details regarding the structure of the courses, promotion criteria, etc. can be found in the appropriate Students' Brochure at the site: **http://www.isical.ac.in/~deanweb.**

Note: The Institute reserves the right to make changes in course structure, selection procedure, etc. as and when needed. B. Stat, M. Stat, M. Math and M.S.(Q.E.) courses are presently under review and the new syllabus may be implemented in the next academic year.

7.1 Bachelor of Statistics (Honours) [B.Stat.(Hons.)]

7.1.1   Scope

The B.Stat.(Hons.) degree programme offers comprehensive instruction in the theory, methods and application of Statistics, in addition to several areas of Mathematics and some basic areas of Computer Science. It also offers optional courses in some other subjects as given in 7.1.4. It is so designed that on successful completion, the students would be able to pursue higher studies in areas of Statistics and Mathematics, as well as Computer Science, Economics and allied fields, or take up careers as Statisticians in research institutions and scientific laboratories, government departments or industries. The total duration of the B.Stat.(Hons.) programme is **three years**. This programme is offered at **Kolkata** only.

7.1.2 Eligibility

In order to be eligible for admission, a student should have successfully completed 10+2 years of Higher Secondary Education (or its equivalent) with Mathematics and English as subjects of study. Any student who is asked to discontinue the B.Stat.(Hons.) programme is not eligible for readmission into this programme.

7.1.3 Selection Procedure

All candidates applying for admission to this programme, except those who are INMO AWARDEES (see next paragraph), will have to appear for written tests comprising objective type and short-answer type questions in Mathematics at the Higher Secondary level (10+2 years' programme). Based on performance in the written tests, a number of candidates are selected to be called for interviews.

The written test for selection is waived for candidates who have been selected as INMO AWARDEES to participate in the IMOTC (International Mathematics Olympiad Training Camp) in the current year or in any previous year, based on their performance in the INMO (Indian National Mathematics Olympiad) test conducted by the National Board of Higher Mathematics, Department of Atomic Energy, Govt. of India. Such candidates would be directly called for interviews. However, such candidates are also required to apply, like all other candidates, for admission to the programme in the prescribed application form. Merely holding an INMO Certficate of Merit from HBCSE (Homi Bhaba Centre for Science Education) will not suffice for waiver of written tests for selection to the programme.

The final selection of candidates for admission to the programme is based on performances in both the written tests as well as the interviews (only interviews for INMO AWARDEE applicants) and the final list of candidates selected for admission is announced after completion of all the interviews.

A candidate who has applied to the B. Stat. (Hons.) programme shall have only one option at a subsequent stage to seek admission to the B. Math. (Hons.) programme of the Institute. Candidates desirous of exercising this option must inform the Dean of Studies of their decisions either in writing or by sending an e-mail (isiadmission@isical.ac.in) by May 21, 2012.

7.1.4 Course Structure

The three-year programme consists of a total of thirty courses distributed as five courses per semester. Three of the thirty courses are *Elective* and the rest are *compulsory* courses. In addition, students who are found to lack adequate proficiency in English at the time of admission are required to take and pass a non-credit course in Remedial English in the first semester of the first year. The list of all the credit courses during the six semesters of the programme is given below.

First Year
Semester I : *Statistical Methods I, Probability Theory I, Analysis I, Vectors & Matrices I, Computational Techniques & Programming I, Remedial English (non-credit).*
Semester II : *Statistical Methods II, Probability Theory II, Analysis II, Vectors & Matrices II, Computational Techniques & Programming II.*

Second Year

Semester I : *Statistical Methods III, Probability Theory III, Analysis III, C & Data Structures, Elective Course I.*

Semester II : *Statistical Methods IV, Elements of Algebraic Structures, Economic Statistics & Official Statistics, Demography (half semester) and SQC & OR (half semester), Elective Course II.*

Third Year

Semester I : *Linear Statistical Models, Statistical Inference I, Sample Surveys, Differential Equations, Elective Course III.*

Semester II : *Introduction to Stochastic Processes, Statistical Inference II, Design of Experiments, Statistics Comprehensive, Database Management Systems.*

The Elective Courses are offered in four groups, each group consisting of three courses, as given below. Each student is required to select one of the four groups and take the three courses in that group.

(i)   *Economics I, Economics II and Economics III.*

(ii)   *Economics I, Economics II and Introduction to Sociology.*

(iii)   *Biology I, Biology II and Anthropology & Human Genetics.*

(iv)   *Physics I, Physics II and Geology.*

Another group of elective courses on Agricultural Science and Agricultural Statistics is likely to be introduced.

The passing score in each course (credit or non-credit) is 35%. In order to get promoted from the First Year to the Second Year, a student needs to pass all the courses in the First Year and also secure an aggregate score of at least 45% in the ten credit courses in the First Year. For promotion from the Second Year to the Third Year, the requirement is securing an aggregate score of at least 40% in the ten credit courses in the Second Year in addition to passing all the courses in the Second Year. **A student who fails to get promotion at the end of the First Year or the Second Year is asked to discontinue the programme.** On completion of the Third Year and subject to fulfilling the necessary requirements in terms of the academic performance during the three years (the details of which are available in the appropriate Students' Brochure), a student is awarded *either* the B.Stat.(Hons.) degree and placed in the First Division with Distinction or First Division or Second Division, *or* the B.Stat.(Pass) degree. Students who fail in the final year or receive a B.Stat.(Pass) degree are allowed one chance to repeat the Third Year without stipend and contingency grant, provided that in no more than eight courses during the first two years have they secured composite scores of less than 45%.

If the overall attendance of a student falls below a minimum of 75% in any semester, his/her stipend is fully withdrawn in the following semester. A student may also have full/partial stipend cut resulting from poor academic performance and/or unsatisfactory conduct. Details of the current rules in this regard are given in the Students' Brochure for B.Stat. (Hons.).

7.2   Bachelor of Mathematics (Honours) [B.Math.(Hons.)]

7.2.1   Scope

The B.Math.(Hons.) degree programme offers comprehensive instruction in basic mathematics along with rudimentary courses in Probability, Statistics, Computing and Physics. It is so

designed that on successful completion, the students would be able to pursue higher studies in the areas of Mathematics, Statistics, Computer Science, Mathematical Physics etc. or take up a career in applications of Mathematics. The total duration of the B.Math.(Hons.) programme is **three years**. This programme is offered at **Bangalore** Centre only.

7.2.2   Eligibility

In order to be eligible for admission, a student should have successfully completed 10+2 years of Higher Secondary Education (or its equivalent) with Mathematics and English as subjects of study. Any student who is asked to discontinue the B.Math.(Hons.) programme is not eligible for readmission into this programme.

7.2.3   Selection Procedure

All candidates applying for admission to this programme, except those who are INMO AWARDEES (see next paragraph), will have to appear for written tests comprising objective type and short-answer type questions in Mathematics at the Higher Secondary level (10+2 years' programme). Based on performance in the written tests, a number of candidates are selected to be called for interviews.

   The written test for selection is waived for candidates who have been selected as INMO AWARDEES to participate in the IMOTC (International Mathematics Olympiad Training Camp) in the current year or in any previous year, based on their performance in the INMO (Indian National Mathematics Olympiad) test conducted by the National Board of Higher Mathematics, Department of Atomic Energy, Govt. of India. Such candidates would be directly called for interviews. However, such candidates are also required to apply, like all other candidates, for admission to the programme in the prescribed application form. Merely holding an INMO Certficate of Merit from HBCSE (Homi Bhaba Centre for Science Education) will not suffice for waiver of written tests for selection to the programme.

   The final selection of candidates for admission to the programme is based on performances in both the written tests as well as the interviews (only interviews for INMO AWARDEE applicants) and the final list of candidates selected for admission is announced after completion of all the interviews.

   A candidate who has applied to the B. Math. (Hons.) programme shall have only one option at a subsequent stage to seek admission to the B. Stat. (Hons.) programme of the Institute. Candidates desirous of exercising this option must inform the Dean of Studies of their decisions either in writing or by sending an e-mail (isiadmission@isical.ac.in) by May 21, 2012.

7.2.4   Course Structure

The three-year programme consists of a total of thirty courses distributed as five courses per semester. The list of the courses over the six semesters of the programme is given below. In addition, students who are found to lack adequate proficiency in English at the time of admission are required to take and pass a non-credit course in Remedial English in the first semester of the first year.

First Year

Semester I : *Analysis I, Algebra I, Probability Theory I, Physics I, Writing of Mathematics (non-credit).*
Semester II : *Analysis II, Algebra II, Probability Theory II, Physics II .*

Second Year

Semester I : *Analysis III, Algebra III, Statistics I, Physics III, Computer Science I.*
Semester II : *Analysis IV , Algebra IV, Statistics II, Optimization, Computer Science II.*

Third Year

Semester I : *Complex Analysis, Introduction to Differential Geometry, Introduction to Differential Equations, Statistics III, Elective Subject I .*
Semester II : *Combinatorics and Graph Theory, Introduction to Representation Theory, Physics IV, Elective Subject II, Elective Subject III.*

Elective Subjects can be chosen from the following List: *Computer Science III, Computer Science IV, Statistics IV, Statistics V, Probability III, Introduction to Algebraic Geometry, Topology, Introduction to Algebraic Number Theory, Differential Geometry II, Introduction to Differential Topology, Mathematics of Computation, Introduction to Dynamical Systems.*

The passing score in each course (credit or non-credit) is 35%. In order to get promoted from the First Year to the Second Year, a student needs to pass all the courses in the First Year and also secure an aggregate score of at least 45% in the ten credit courses in the First Year. For promotion from the Second Year to the Third Year, the requirement is securing an aggregate score of at least 40% in the ten credit courses in the Second Year in addition to passing all the courses in the Second Year. **A student who fails to get promotion at the end of the First Year or the Second Year is asked to discontinue the programme.** On completion of the Third Year and subject to fulfilling the necessary requirements in terms of the academic performance during the three years (the details of which are available in the appropriate Students' Brochure), a student is awarded *either* the B.Math.(Hons.) degree and placed in the First Division with Distinction or First Division or Second Division, *or* the B.Math.(Pass) degree. Students who fail in the final year or receive a B.Math.(Pass) degree are allowed one chance to repeat the Third Year without stipend and contingency grant, provided that in no more than eight courses during the first two years they have secured composite scores of less than 45%.

If the overall attendance of a student falls below a minimum of 75% in any semester, his/her stipend is fully withdrawn in the following semester. A student may also have full/partial stipend cut resulting from poor academic performance and/or unsatisfactory conduct. Details of the current rules in this regard are given in the Students' Brochure for B.Math.(Hons.).

7.3   Master of Statistics [M.Stat.]

7.3.1   Scope

The M.Stat. programme offers advanced level training in the theory, methods and applications of Statistics along with specialized training in selected areas of Statistics and allied fields. Depending on the area of specialization, students would be able to pursue an academic/research career in Statistics, Mathematics, Economics, Computer Science and allied

fields. They would also be able to work competently as Statisticians and specialists in research institutions and scientific laboratories, government departments or industries. The total duration of the M.Stat. programme is **two years**. This programme is being offered this year at **Chennai** and **Delhi**.

7.3.2 Eligibility

In order to be eligible for admission to the M.Stat. programme, a student must have a 3 year Bachelor's degree with Statistics as full subject, or have a B.Stat./B.Math. degree from the Indian Statistical Institute or a Statistician's Diploma/Senior Diploma in Statistics from the Indian Statistical Institute. Any student who was asked to discontinue the M.Stat. programme is not eligible for readmission into this programme.

7.3.3 Selection Procedure

Students with B.Stat.(Hons.) degree from the Indian Statistical Institute are offered direct admission to the M.Stat. programme without any selection test and interview. For other eligible candidates, including students with B.Stat.(Pass) degree from the Indian Statistical Institute, selection for admission to the M.Stat. programme is based on academic record, performance in written selection tests and subsequent interview. If a candidate holds a Statistician's Diploma/Senior Diploma in Statistics from the Indian Statistical Institute and is selected for admission, he/she may be considered for admission to the Second Year of the programme.

The written selection tests consist of :

(a) a test comprising objective and/or short-answer questions in Mathematics at Bachelor's degree level, and

(b) a test comprising objective and/or short-answer questions in Statistics and Mathematics at a three-year Bachelor's degree level, designed to assess competence in the theory and methods of Statistics and comprehension in Mathematics.

7.3.4 Course Structure

The M.Stat. programme is offered in two different streams, namely, B-stream and NB-stream. Further, the students of this programme need to do either a two-year *Applications* specialization or one of the following specializations in the second year:
Advanced Probability (AP)
Actuarial Statistics (AS)
Applied Statistics and Data Analysis (ASDA)
Biostatistics and Data Analysis (BSDA)
Industrial Statistics and Operations Research (ISOR)
Mathematical Statistics and Probability (MSP)
Quantitative Economics (QE)
A student, who does not opt for *Applications* specialization, must follow the usual first year curriculum in his/her stream, as given below. A student with B.Stat. (Hons.) degree from the Institute is put in the B-stream and he/she has to choose between the usual first year curricula for the B-stream and the *Applications* specialization. **A student, who joins the programme by qualifying in the entrance test, is placed in NB-stream *or* B-stream with usual respective first year curricula *or Applications* specialization by the Selection Committee. However, all candidates applying for this programme should indicate their preferences for B-Stream/NB-Stream/Applications Specialization by writing the appropriate Course**

Code i.e., Item 3 in the Application Form (Course Codes are given on page 38).

After the first year, students who opted for the *Applications* specialization can either, continue to follow the curriculum for the specialization, or, discontinue the *Applications* specialization and opt for a different specialization, one among the one-year ones mentioned above. Those opting for a different specialization will have to take the following courses concurrently in the second year:

(i) a non-credit course in C/C++ programming and

(ii) the courses prerequisite for the chosen specialization.

Students, who did not do *Applications* specialization in the first year, can opt for any specialization including *Applications* in the second year.

Offering a specialization in a particular centre is subject to the interest of the students and the availability of the adequate resources. The Dean of Studies will inform the students in advance about the availability of the specializations and the respective centres. **Not all specializations may be offered at all the centres**. **Applications Specialization is being offered in the Chennai Centre only. The first year programme for B- stream and NB-stream will be held at Kolkata and Delhi, respectively.**

In case a particular specialization is not offered at a centre, a student of that centre opting for that specialization may be asked to study at a different centre where such specialization is offered. Each specialization has a number of prerequisites in terms of specific courses. The selection of students for various specializations in the second year will depend on students' preferences, their academic background as well as their performance in the First Year. The final selection of students for various specializations in the second year is determined by the Dean of Studies in consultation with the Teachers' Committee.

First Year

The curriculum for the First Year consists of ten courses for each of B-stream, NB-stream, and Applications Specialization, as listed below. In addition, each student has also to take a course in Official Statistics offered at the end of the First Year.

***B*-stream:**

Semester I *: Large Sample Statistical Methods, Measure Theoretic Probability, Sample Surveys & Design of Experiments, Applied Stochastic Processes, Statistical Inference I .*

Semester II : *Regression Techniques, Multivariate Analysis, Metric Topology & Complex Analysis, Elective I, Elective II .*

***NB*-stream:**

Semester I : *Linear Models & Markov Chain, Real Analysis, Large Sample Statistical Methods, Sample Surveys & Design of Experiments, Statistical Inference I .*

Semester II : *Regression Techniques, Multivariate Analysis, Programming & Data Structures, Elective I, Elective II .*

Elective Courses: *Time Series Analysis, Discrete Mathematics, Optimization Techniques, Measure Theoretic Probability, Metric Topology & Complex Analysis, Nonparametric and Sequential Analysis (the last three are available only to NB-Stream students).*

Applications Specialization :

Semester I : *Analysis I, Probability and Stochastic Processes I, Methods of Statistical Inference I, Linear Algebra, Elements of Sample Surveys and Design of Experiments.*

Semester II : *Probability and Stochastic Processes II, Linear Models and GLM, Statistical Inference II, Multivariate Analysis, Regression Techniques.*

A student is promoted from the First Year to the Second Year of the M.Stat. programme provided, in the First Year, his/her attendance and conduct are satisfactory and his/her composite score in no course is less than 35% and the average composite score in all the courses taken together is not less than 45%. **Students who fail to get promoted are asked to discontinue the programme.**

Second Year

Each student in the Second Year has to take a total of ten courses (five in each semester), which will include all the Compulsory Courses for his/her specialization and a certain number (as required by the specialization) of courses from the Lists of Elective Courses (details of which are available in the Students' Brochure for M.Stat.) for his/her specialization. The remaining elective courses, if any, can be selected from any other course offered in the second year of the M.Stat. programme at that centre.

The compulsory courses for the **Applications Specialization** in the second year are as follows.
Semester I : *Analysis II, Statistical Computing, Time Series Analysis.*
Semester II : *Probability and Stochastic Processes III , Project.*

The compulsory courses for all other specializations offered in the second year are listed below.

 (a) **Advanced Probability (AP)** : *Advanced Probability I, Functional Analysis, Stochastic Processes I , Stochastic Processes II.*

(b) **Actuarial Statistics (AS)** : *Actuarial Methods, Life Contingencies, Actuarial Models, Survival Analysis.*

(c) **Applied Statistics & Data Analysis (ASDA)** : *Advanced Design of Experiments, Analysis of Discrete Data, Statistical Computing, Advanced Sample Surveys, Applied Multivariate Analysis.*

(d) **Bio-Statistics & Data Analysis (BSDA)** : *Statistical Methods in Genetics I, Analysis of Discrete Data, Statistical Computing, Survival Analysis, Statistical Methods in Public Health, Statistical Methods in Biomedical Research.*

(e) **Industrial Statistics & Operations Research (ISOR)** : *Advanced Design of Experiments, Life Testing and Reliability, Quality Control and Its Management, Management Applications of Optimization, Industrial Applications of Stochastic Processes, Optimization Techniques II.*

(f) **Mathematical Statistics & Probability (MSP)** : *Advanced Probability I, Functional Analysis, Stochastic Processes I, Statistical Inference II.*

(g) **Quantitative Economics (QE)** : *Microeconomics I, Game Theory I, Econometric Methods, Macroeconomics I.*

On completion of the Second Year and subject to fulfilling the necessary requirements in terms of academic performance during the two years (the details of which are available in the appropriate Students' Brochure), a student is awarded the M.Stat. degree and placed *either* in the First Division with Distinction *or* in the First Division *or* in the Second Division. Students who fail in the final year are allowed one chance to repeat the Second Year without stipend and contingency grant, provided that his/her average composite score in the Second Year is not less than 35% and that his/her conduct is satisfactory.

If the overall attendance of a student falls below a minimum of 75% in any semester, his/her stipend is fully withdrawn in the following semester. A student may also have full/partial stipend cut resulting from poor academic performance and/or unsatisfactory conduct. Details of the current rules in this regard are given in the Students' Brochure for M.Stat.

7.4   Master of Mathematics [M.Math.]

7.4.1   Scope

The M. Math. programme offers advanced level training in Mathematics. On successful completion of the course, students would be able to pursue a research/academic career in Mathematics. Depending on the choice of the optional subjects, the students would also be able to work in the fields of Probability Theory and Theoretical Computer Science. The total duration of the M.Math. programme is **two years**. This programme is being offered this year at **Bangalore** only.

7.4.2   Eligibility

In order to be eligible for admission to the M.Math. programme, a student must *either* have a three-year Bachelor's degree or a B. E./B. Tech. Degree, with Mathematics and **an exceptionally strong background in Analysis and Abstract Algebra** *or* have a B. Stat. /B. Math. degree of the Indian Statistical Institute. Any student who is asked to discontinue the M.Math. programme is not eligible for readmission into this programme.

7.4.3   Selection Procedure

Students with B.Math.(Hons.) degree from the Indian Statistical Institute are offered direct admission to the M.Math. programme without any selection test and interview. For other eligible candidates, including students with B.Math.(Pass) degree from the Indian Statistical Institute, selection for admission to the M.Math. programme is based on academic record, performance in written selection tests and subsequent interview.

The selection tests will comprise objective and/or short-answer type questions in Mathematics at a level corresponding roughly to the Mathematics Honours/Mathematics Major of Indian universities, with special emphasis on Real Analysis, Linear and Abstract Algebra.

7.4.4   Course Structure

The programme will be conducted over four semesters. A student will have to take five courses in each semester.

Compulsory Courses: *Analysis of Several Variables, Measure Theoretic Probability, Algebra I, Topology I, Linear Algebra, Complex Analysis, Functional Analysis, Algebra II, Topology II, Differential Geometry I, Differential Topology, Fourier Analysis, and Basic Probability Theory (only for non-B.Stat. and non-B.Math. students).*

Elective Courses: *Differential Equations (only for non-B.Stat. and non-B.Math. students), Graph Theory and Combinatorics, Number Theory, Commutative Algebra I, Differential Geometry II, Topology III, Partial Differential Equations, Advanced Probability, Algebra III, Representations of Locally Compact Groups, Commutative Algebra II, Advanced Number Theory, Algebraic Geometry, Algebraic Number Theory, Markov Chains, Ergodic Theory, Topology IV, Advanced Functional Analysis, Operator Theory, Set Theory, Mathematical Logic, Advanced Linear Algebra, Lie Groups and Lie Algebras, Linear Algebraic Groups, Elliptic Curves, Stochastic Processes, Game Theory, Automata Languages and Computation, Advanced Fluid Dynamics, Quantum Mechanics I, Quantum Mechanics II, Analytical Mechanics, Project I, Project II and Special Topics.*

Offering an elective course will depend on students' interest and availability of teachers. Each student **has to take at least one of the following three courses**: *Number Theory, Advanced Number Theory, Algebraic Number Theory.* The details of sequencing of the courses over the four semesters and the specific prerequisites for different courses are available in the appropriate Students' Brochure.

A student is promoted from the First Year to the Second Year of the M.Math. Programme provided, in the First Year, his/her attendance and conduct are satisfactory and his/her composite score in no course is less than 35% and the average composite score in all the courses taken together is not less than 45%. **Students who fail to get promoted are asked to discontinue the programme.** On completion of the Second Year and subject to fulfilling the necessary requirements in terms of academic performance during the two years (the details of which are available in the appropriate Students' Brochure), a student is awarded the M.Math. degree and placed *either* in the First Division with Distinction *or* in the First Division *or* in the Second Division. Students who fail in the final year are allowed one chance to repeat the Second Year without stipend and contingency grant, provided that his/her average composite score in the Second Year is not less than 35% and that his/her conduct is satisfactory.

If the overall attendance of a student falls below a minimum of 75% in any semester, his/her stipend is fully withdrawn in the following semester. A student may also have full/partial stipend cut resulting from poor academic performance and/or unsatisfactory conduct. Details of the current rules in this regard are given in the Students' Brochure for M.Math.

7.5   Master of Science in Quantitative Economics [M.S.(Q.E.)]

7.5.1   Scope

This is an advanced course in Economics and its applications with special emphasis on quantitative methods. On completion of the course, the students would be able to pursue an academic career in Economics or take up responsible positions in various private and public sector organizations. The total duration of the M.S.(Q.E.) programme is **two years.** This programme is offered at **Kolkata** and **Delhi**.

7.5.2   Eligibility

In order to be eligible for admission to the M.S. (Q.E.) programme, a student must have a three-year Bachelor's degree in Economics / Mathematics / Statistics / Physics or a B.Stat. degree from the Indian Statistical Institute. Engineering graduates are also eligible to apply. Candidates should have knowledge of Economics and Mathematics at B.A./ B.Sc. pass level. Any student who has been asked to discontinue the M.S.(QE) programme is not eligible for readmission into this programme.

7.5.3   Selection Procedure

Selection of candidates to the M.S.(Q.E.) programme will be based on academic record and performance in written tests and interview. The selection tests will comprise objective and/or short-answer questions in **both Economics and Mathematics at the Bachelor's degree level.**

7.5.4   Course Structure

There will be 8 compulsory courses and 12 elective courses. The compulsory courses, along with their sequencing over the semesters are as follows:
First Year
Semester I : *Microeconomic Theory I, Game Theory I, Statistics, Mathematical Methods and one Elective Course.*
Semester II : *Microeconomic Theory II, Macroeconomic Theory I, Econometric Methods I and two Elective Courses.*
Second Year
Semester I *: Macroeconomic Theory II and any four from the list of Elective Courses.*
Semester II : Any five from the list of Elective Courses.

List of Elective Courses
Computer Programming and Applications, Econometric Methods II, Econometric Applications I, Econometric Applications II, Time Series Analysis and Forecasting, Sample Surveys : Theory and Practice, Bayesian Econometrics, Mathematical Programming with Applications to Economics, Game Theory II, Economic Development I, Economic Development II, Intertemporal Economics, Modern Growth Theory, Industrial Organization, Theory of Planning, Social Accounting, Agricultural Economics, Public Economics, Regional Economics, International Economics I, International Economics II, Advanced Topics in International Economics, Monetary Economics, History of Economic Thought, Social Choice and Political Economy, Incentives and Organizations, Privatization and Regulations, Environmental Economics, Theory of Finance I, Theory of Finance II, Theory of Finance III, Political Economy and Comparative Systems, Selected Topics I, Selected Topics II .

Offering an elective course will depend on students' interest and availability of teachers. A student is promoted from the First Year to the Second Year of the M.S.(Q.E.) Programme provided, in the First Year, his/her attendance and conduct is satisfactory and his/her composite score in no course is less than 35% and the average composite score in all the courses taken together is not less than 45%. **Students who fail to get promoted are asked to discontinue the programme**. On completion of the Second Year and subject to fulfilling the necessary requirements in terms of the academic performance during the two years (the details of which are available in the appropriate Students' Brochure), a student is awarded the M.S.(Q.E.) degree and placed *either* in the First Division with Distinction *or* in the First Division *or* in the Second Division. Students who fail in the final year are allowed one chance to repeat the Second Year without stipend and contingency grant, provided that his/her average composite score in the Second Year is not less than 35% and that his/her conduct is satisfactory.

If the overall attendance of a student falls below a minimum of 75% in any semester, his/her stipend is fully withdrawn in the following semester. A student may also have full/partial stipend cut resulting from poor academic performance and/or unsatisfactory conduct. Details of the current rules in this regard are given in the Students' Brochure for M.S.(Q.E.).

7.6. Master of Science in Library and Information Science [M.S.(LIS)]

7.6.1 Scope

This is an advanced programme in Library and Information Science with special emphasis on applications of Information technology. On completion of the programme, the students will be able to pursue an academic career or take up responsible positions in various private and public sector organizations in Library and Information field. The objectives of the course are to develop manpower capable of :

- Effectively and efficiently working as information professionals at higher levels in libraries and information centres.
- Design & development of information systems.
- Contributing to the discipline of Library and Information science in terms of research and teaching.

The total duration of this programme is **two years**, and it is offered at **Bangalore** only**.**

7.6.2 Eligibility

The minimum qualification for admission to the M.S. in Library and Information Science programme is a three-year Bachelor's degree in any discipline.

7.6.3 Selection Procedure

Selection of candidates will be based on academic records and performance in written tests and interview.

7.6.4 Course Structure

The two-year programme consists of a total of twenty credit-courses distributed over four semesters. These include colloquium, seminar and dissertation work. In addition, there are two courses in Elementary Mathematics (each carrying four credits) in the first and second semesters. However, for those who have not studied mathematics at the plus two level, these two courses are credit-courses.

The dissertation work on an approved topic will be spread over the 3rd and 4th semesters. Evaluation of dissertation will be based on   a) the contribution by the student (original contribution or some developmental work), b) report itself, c) presentation in an open seminar (defense), and d) depth of knowledge in the area.

The courses along with their sequencing over the semesters are as follows:

Semester I: *Foundations of Library and Information Science; Information Organization (Theory and Practice); Cataloging and Metadata (Theory and Practice); Foundations of Computer & Information Technology; Library Management & Library Automation (4 credits each) and Elements of Mathematics-I (credit or non-credit).*

Semester II: *Information Sources, Systems and Services; Elements of Statistics and Research Methodology; Digital Libraries; Data Structures and Programming; Colloquium (4 credits each) and Elements of Mathematics-II (credit or non-credit).*

Semester III: *Information Storage, Retrieval and DBMS; Content Management Systems (CMS); Informetrics and Scientometrics; Web Technologies and Web-based Information Services; Seminar (4 credits each) and Dissertation.*

Semester IV: *Networking Technologies and Library Networks; Knowledge Management Systems; Semantic Web; Elective(4 credits each) and Dissertation (8 credits)*

Electives : One of the following subjects has to be chosen by a student as an *elective*. Business & Corporate Information Systems; Health Information Systems; Agricultural Information Systems, Social Science Information Systems; TQM; Data & Text Mining, etc.

The programme may also include any other advanced level course as recommended by the Teachers' Committee and approved by the Academic Council.

There will be four semesters in this programme. Evaluation of candidates in each semester will be based on their performance in the examinations / seminars / colloquia as applicable to a particular course in that semester.

Minima for Passing a Course: A student has to secure at least 35% marks in each course (credit or non-credit) to pass that course. Any student, who fails to secure 35% marks in a paper, will be allowed one more chance to appear for an examination (as a back paper examination) in that course. However, a student will be allowed to take at most two back paper examinations in a semester.

A student is promoted from one semester to the next if i) his/her attendance and conduct during the semester are satisfactory, and ii) his/her score in no course is less than 35%, and iii) the average composite score in all the courses taken together is not less than 45%. **A student, who fails to get promoted in Semester 1 or Semester 2, has to discontinue the programme**. However, a student who fails in Semester 3 or Semester 4, will be given one more chance to repeat the corresponding semester without any stipend. At the end of the fourth semester, all successful candidates will be awarded the degree of Master of Science (Library & Information Science) [M.S. (Library & Information science)] of the Indian Statistical Institute. The classification of all successful candidates will be done as follows:

- Candidates securing 75% or more marks in the aggregate will be declared to have passed in *first division with distinction, provided he/she passed in all the papers in the first attempt.*
- Candidates securing 60% or more, but less than 75% marks in the aggregate taking into consideration all the courses will be declared to have passed in *first division.*
- Candidates securing 45% or more, but less than 60% marks in the aggregate taking into consideration all the courses will be declared to have passed in *second division.*

If a student fails in Semester 3 or Semester 4, his/her stipend and contingent grant will be fully withdrawn when he/she repeats that semester next time. Also, partial stipends may be given to a student at the discretion of the Teachers' Committee, if a student's conduct/attendance is not satisfactory.

7.7   Master of Technology in Computer Science [M. Tech. (CS)]

7.7.1   Scope

The Master of Technology in Computer Science programme is offered in Kolkata. The programme is designed to provide a balance of theoretical and professional training in Computer Science and Technology so that the students, on successful completion of the programme, may take up either (a) a professional career in the technology of software for computer systems or specialized application areas, or (b) an academic career for further study and research in the fundamental and applied aspects of Computer Science and Technology and

related disciplines. The total duration of this programme is **two years**, and it is offered at **Kolkata** only.

7.7.2 Eligibility

A candidate seeking admission to this programme should possess one of the following minimum academic qualifications : (i) a Master's degree in Mathematics/ Statistics/ Physics/ Electronic Science/ Computer Science/ Computer Applications/Information Technology or, (ii) a Bachelor's degree in Engineering/Technology or any other qualification considered equivalent (such as AMIE or, GRADIETE or, DOEACC 'B' Level). Any student who is asked to discontinue the M.Tech.(CS) programme is not eligible for readmission into this programme.

7.7.3 Selection Procedure

A candidate is admitted to this programme through written tests and interview. A few candidates may be sponsored by government, semi government, public sector undertakings and autonomous institutions but such candidates will also be admitted through the selection test; the Institute at its discretion may apply a different criterion for such candidates. A candidate would be considered sponsored only if he/she is granted leave and full salary by the employer for the entire duration of the course. Sponsored candidates will not receive any stipend and their sponsors will have to pay a tuition fee of Rs. 20,000/ per year.

The selection test typically consists of two parts:
(i) an objective and/or short-answer type test in Mathematics at the B.Sc. (Pass) level ;
(ii) an objective and/or short-answer type test comprising the following :
Group A : A test for all candidates in Mathematics at the B.Sc.(Pass) level and logical reasoning.
Group B : A test, divided into five sections carrying equal marks, in Mathematics, Statistics and Physics at the M.Sc. level and in Computer Science, Engineering and Technology at the B.Tech. level. A candidate has to answer questions from one of these sections only.

A candidate with a valid GATE score above a threshold (to be decided by the Selection Committee) in his/her own subject, would be directly called for interview. Final selection of such candidates would be based on their academic records and their performance in the interview. These candidates are required to apply, like all other candidates, in the prescribed application form.

7.7.4 Course Structure

The duration of the M.Tech. (CS) programme is two years which is divided into four semesters. A student is required to take five courses each in the first three semesters, and two courses in the fourth semester. Apart from these seventeen courses, a student has to undergo a dissertation work during the third and fourth semesters of the course. In addition, a student has to undergo, after successful completion of course work in the first and second semesters, a compulsory practical training of about eight weeks in a research institute or a public/private sector organization under the guidance of an assigned supervisor in that institute/organization.

Further, a student may take extra noncredit courses, at most one per semester, either on recommendation of the faculty or out of his/her own interest.

The courses of study in various semesters are as follows.

First Year

Semester I

Discrete Mathematics, Data and File Structures and three courses from the List A of courses, as advised by the faculty depending on the background of the student.

List A : *Introduction to Programming, Data and File Structures Laboratory, Computer Organization, Elements of Algebraic Structures, Probability and Stochastic Processes, Principles of Programming Languages.*

Semester II

 Computer Networks, Design and Analysis of Algorithms, Automata Languages and Computation, Database Management Systems, Operating Systems.

Second Year

Semester III

Five electives to be selected from the List B of courses, as advised by the faculty based on the background of the student and Dissertation (to be continued through the fourth semester).

Semester IV

Two electives to be selected from the List B of courses given below and Dissertation (continued from the third semester).

List B : *Computer Architecture, Compiler Construction, Software Engineering,* Cryptology, *Information and Coding Theory, Advanced Cryptology, Information Security and Assurance, Topics in Algebraic Computation, Optimization Techniques, Advanced Algorithms for Graph and Combinatorial Optimization Problems, Multi-dimensional Search and Computational Geometry, Combinatorial Geometry, Topics in Algorithms and Complexity, Computational Complexity, Quantum Information Processing and Quantum Computation, Computational Finance, Algorithmic Game Theory, Computational Molecular Biology and Bioinformatics, Parallel Processing: Architectures and Algorithms, Formal Aspects of Programming Languages and Methodology, Logic for Computer Science, Formal Methods in Computer Science - Selected topics, Logic Programming and Deductive Databases, Lambda-Calculus, Combinators and Functional Programming, Advanced Operating Systems, Advanced Database Theory and Applications, Real Time Systems, Robotics,   Distributed Computing Systems, Mobile Computing, Software Design and Validation, VLSI Design and Algorithms, Nanotechnology and Biochips, VLSI Testing and Fault-tolerance, Internet and Multimedia Technologies, Digital Signal Processing, Pattern Recognition and Image Processing, Artificial Intelligence and Expert Systems, Advanced Web Technology/Advanced Internet Programming, Advanced Pattern Recognition, Advanced Image Processing, Computer Vision, Computer Graphics, Data Mining, Analysis of Remote Sensing Images, Fuzzy Logic and Applications, Neural Networks and Applications, Document Processing and Retrieval, Selected Topics on recent developments in Computer Science as suggested by the faculty.*

The Teachers' Committee determines the subjects to be offered in any particular semester.

Dissertation: A student is required to work toward a dissertation on a topic assigned/approved by the teachers' committee under the supervision of a suitable ISI faculty member. The work for a dissertation should relate to a relevant problem in an area of computer science and/or its applications, and have substantial theoretical or practical significance. A critical review of

recent advances in an area of computer science and/or its applications with some contribution by the student may also be acceptable as a dissertation.

The work should commence at the beginning of the third semester and be completed along with the courses of the fourth semester. The dissertation should be submitted by the middle of July of the year of completion. The dissertation will be evaluated by a committee consisting of the faculty members, the supervisor and external expert(s). The student has to defend his/her dissertation in an open seminar. The dissertation is considered to be equivalent to three credit courses.

The final result of a student is decided on the basis of his/her performance in all the courses, summer training and dissertation. A student admitted to the first year of the programme is allowed to attend the second semester of the programme if he/she passes the first semestral examinations; otherwise he/she has to discontinue the programme. A student who takes all the second semestral examinations will be allowed to go for summer training, otherwise, he/she has to discontinue the programme. A student who passes the second semestral examination and completes the summer training satisfactorily (certified by the guide) is promoted to the third semester of the programme, otherwise, he/she has to discontinue the programme. A student promoted to the third semester of the programme will be allowed to attend the fourth semester of the programme if he/she passes the third semestral examinations. A student who successfully defends his/her dissertation and project report within the prescribed time limit and passes the fourth semestral examinations will be declared to have completed the fourth semester of the programme. If a student fails in a course in any semester, he/she will be allowed to take a backpaper examination. At most one backpaper examination is allowed in a given subject. A student can take a maximum of 2 (two) backpaper examinations in the first year and a maximum of 2 (two) in the second year. However, there will be no backpaper examination for the Dissertation.

A student passing the M.Tech.(CS) is placed in the First Division with Honours, First Division or Second Division depending on his/her performance.

Details of all relevant aspects of this programme are given in the Students' Brochure for M.Tech. (CS).

7.8 Master of Technology in Quality, Reliability and Operations Research [M. Tech. (QROR)]

7.8.1 Scope

The Master of Technology in Quality, Reliability and Operations Research is a **two-year** full time programme and is offered at **Kolkata** only. This programme is intended to develop specialists in Quality Management with emphasis on Statistical Quality Control, Reliability, Operations Research, Computer Engineering and Management Systems. The objective is to equip students with the necessary skills together with sufficient theory to understand the principles involved in applications and to develop in them the power of systematic thinking and reasoning and methodical approach to solving live industry problems of quality, reliability and productivity. Besides undergoing classroom instructions, every student shall do a dissertation and project works on live problems of industry directly under the guidance of the faculty of ISI.

7.8.2 Eligibility

A candidate seeking admission to this course should

(i)   be conversant with the following topics : Mathematics (at the graduate level) and knowledge of Physics and Chemistry (at the higher secondary level);

(ii)   possess any of the following minimum qualifications:

        a.   Master's Degree in Statistics.

        b.   Master's Degree in Mathematics with Probability and Statistics as major subjects.

        c.   Bachelor's Degree in Engineering or Technology or any other qualification considered equivalent.

        d.   Post-Graduate Diploma in SQC & OR from the Indian Statistical Institute.

Any student who is asked to discontinue the M. Tech. (QROR) programme is not eligible for readmission into this programme.

The programme is offered in two streams:

Statistics Stream for candidates with qualifications as in *a*, *b*, or *d*, of (ii) above;

Engineering Stream for candidates with Bachelor's / equivalent degree in Engineering or Technology as in *c* of (ii) above.

7.8.3 Selection Procedure

All candidates, including sponsored ones, are admitted through a selection test. For admission to this course, valid GATE score is not necessary, and the candidates with valid GATE scores, are also admitted through the selection test. There is, however, a provision for sponsorship by government, semi-government, public sector undertakings, autonomous institutions and industrial organisations. Organisations can sponsor candidates from their establishments for this programme provided they satisfy the eligibility requirements. The Institute, at its discretion, may apply a different criterion for such candidates. A candidate would be considered sponsored only if the employer, for the entire duration of the programme, gives him/her leave and full salary. Sponsored candidates will not receive any stipend and their sponsors will have to pay a tuition fee of Rs. 20,000/- per year.

The selection test will consist of two parts:

(a)   an objective and/or short-answer type test in Mathematics at the B.Sc. (Pass) level;

(b)   an objective and/or short-answer type test for the two streams as follows:

Part I (for Statistics Stream): A test divided into two sections carrying equal marks, in Statistics and Probability. A student has to answer questions from both the sections.

Part II (for Engineering Stream): A test divided into several sections: Mathematics, Engineering Mechanics, Electrical & Electronics Engineering, Thermodynamics, Engineering Properties of Metals, Engineering Drawing etc. A student has to answer questions from Mathematics section compulsorily and the remaining questions from two or more sections of his/her choice.

7.8.4 Course Structure

The M.Tech.(QROR), progrmme is conducted over four semesters, two semesters each in the first and second years. The following courses are offered in the first year.

(a) **For the Statistics Stream**: *(i) Electrical and Electronics Engineering, (ii) SQC I & II, (iii) Operations Research I, (iv) Programming Techniques and Data Structures, (v) Quality Management and Systems, (vi) Workshop I & II, (vii) Mechanical Engineering, (viii) Instrumentation and Computer Engineering, (ix) Industrial Engineering and Management, (x) Reliability I.*

(b) **For the Engineering Stream**: *(i) Probability I & II, (ii) Statistical Methods I & II, (iii) SQC I & II, (iv) Operations Research I, (v) Programming Techniques and Data Structures, (vi) Quality Management and Systems, (vii) Instrumentation and Computer Engineering, (viii) Industrial Engineering and Management, (ix) Reliability I.*

The following courses are offered during the second year for both the streams:

(i) Operations Research II, (ii) Industrial Experimentation, (iii) Reliability II, and three elective subjects selected from a broad range of subjects like Applied Stochastic Processes, Advanced Statistical Methods, Advanced Optimization Techniques, Software Engineering, Database Management Systems, Advanced Reliability, Game Theory and Decision Theory, or other selected subjects as suggested by the faculty.

However, from the above list of elective subjects, the Teachers' Committee will decide on the subjects to be offered to the students and also the combination a student may take up.

In addition, at the end of the first year, the students have to undertake project studies (Project - I) in industries. During the fourth semester of the second year, they have to work on dissertation at the Institute and also have to undertake the second phase of project work (Project – II) in industries.

Every student is expected to attend all the classes. If he/she is absent, he/she must apply for leave to the Dean of Studies or the Academic Coordinator. Failing to do so may result in disciplinary action.

The final result of a student is decided on the basis of his/her performance in all the courses, project studies and dissertation. A student admitted to the first year of the programme is allowed to attend the second semester of the programme if he/she passes the first semestral examinations; otherwise he/she has to discontinue the programme. A student who takes all the second semestral examinations will be allowed to go for Project - I, otherwise, he/she has to discontinue the programme. A student who passes the second semestral examination and completes the Project - I satisfactorily (certified by the guide) is promoted to the third semester of the programme; otherwise, he/she has to discontinue the programme. A student promoted to the third semester of the programme will be allowed to attend the fourth semester of the programme if he/she passes the third semestral examinations. A student who submits his/her dissertation and project reports within the prescribed time limit and passes the fourth semestral examinations will be declared to have successfully completed the fourth semester of the programme. If a student fails in a course work in any semester, he/she will be allowed to appear at backpaper examinations for improving his/her performance. At the most one backpaper examination is allowed in a given course. A student can improve his/her performance in at the most two courses per academic year through backpaper examinations. However, he/she may be allowed to appear in backpaper examinations in a maximum of two courses in each of the first three semesters. A student will have to decide at the end of an academic year, which two backpaper examinations scores shall be retained by him/her. However, there will be no backpaper examinations for Dissertation, Project - I and Project - II.

A student passing the M. Tech. (QROR) degree examination is placed either in the First Division with Distinction, or First Division or Second Division depending on his/her performance.

Details of all relevant aspects of this programme are given in the Students' Brochure for M.Tech. (QROR).

7.9 Post- Graduate Diploma in Statistical Methods with Applications

7.9.1 Scope

The course is intended to provide students with a comprehensive yet thorough training in basic theories, methods and applications of Statistics, in addition to some exposure to Mathematics and Computer Science. It is so designed that on successful completion, the students would be able to take up jobs as statisticians in such departments of government and industries where application of Statistics is required, and also teach Statistics competently at + 2 level in schools. The one-year rigorous training, as is the tradition of the Institute, will also prepare the students for advanced level post-graduate courses. The total duration of this programme is **one year**, and it is offered at the **North-East** centre of the institute at **Tezpur, Assam.**

7.9.2 Eligibility

In order to be eligible for admission to this programme, a student must have a 3- year Bachelor's degree with Mathematics as one of the subjects at the undergraduate level. B.Tech. and B.E. students are also eligible to apply. Any student who is asked to discontinue the programme, is not eligible for readmission into this programme.

7.9.3 Selection Procedure

Selection of candidates to this diploma course will be based on academic record and performance in written test(s) and interview. The selection test(s) will comprise objective and/or short-answer questions in Mathematics at pass/minor level of Bachelor's degree.

7.9.4 Course Structure

The one-year programme consists of a total of 10 courses distributed as five courses in each of the two semesters. While all the 5 courses in the first semester are compulsory, only 2 are so in the second semester. The remaining three *viz.*, *Special Topics I, Special Topics II, and Special Topics III* are module - based courses - each comprising 3 modules - to be chosen / offered out of a total of 17 modules on special topics. Each of these modules would be taught over a period of one month involving about 20 lecture hours.

Semester I: *Real Analysis, Linear Algebra, Probability, Descriptive Statistics, Numerical Analysis and Programming in C*

Semester II: *Bivariate and Multivariate Analysis, Statistical Inference, Special Topics I [3 out of 17 modules to be offered], Special Topics II [3 out of the remaining 14 modules to be offered], Special Topics III [3 out of the last remaining 11 modules to be offered].*

SPECIAL TOPIC MODULES: *(1) Time Series Analysis, (2) Econometrics, (3) Survival Analysis, (4) Clinical Trials, (5) Life Testing & Reliability, (6) Actuarial Methods, (7) Statistical Quality Control, (8) Operations Research, (9) Demography, (10) Sample Surveys, (11) Linear Models, (12) Design of Experiments, (13) Introduction to Stochastic Processes, (14) Statistical Computing, (15) Data Structures and Basic Algorithms, (16) Introduction to DBMS, (17) Topics of Current Interests*

All students would be required to spend one week at the headquarters of the institute (Kolkata) at the end of Semester I. During this period, they would visit different units of the institute and also the NSSO, Kolkata

7.10 Part-time Course in Statistical Quality Control

(This course will be notified separately)

7.10.1 Scope

This course is intended to provide intensive training in the theory and practice of SQC. Emphasis is on equipping the students with the basic practical skills in SQC approach with sufficient theory to understand the principles involved, and to develop in them the power of systematic thinking, practical approach and exposition. The course is offered at Bangalore and Hyderabad Centres. But it is not offered at a centre in a session unless at least 10 selected candidates are enrolled for it.

7.10.2 Duration

The course is held twice a year and extends over a period of 6 months : January-June and July-December. Classes are usually held on five days a week in two sessions of one hour duration each commencing at 1800 hours or at the week-ends with four hour sessions each day on Saturday and Sunday.

7.10.3 Eligibility

Admission is restricted to persons working in industrial, commercial or scientific organizations and sponsored by their organizations. Minimum educational qualifications are any one of the following :

(i)   Diploma in any branch of Engineering or Technology from a recognized Institution;

(ii)   Bachelor's degree (with Mathematics at the pre-university or equivalent level) from a recognized university or institution.

Candidates should normally be under 35 years of age. Candidates should possess a minimum of one year's working experience in an industrial, commercial or scientific organization. The sponsoring organizations must ensure

(i)   that their candidates will attend at least 75% of the classes,

(ii)   adequate opportunities for the candidates to carry out the project work on some problem of interest to them,

(iii) facilities - such as transport - to the SQC and OR Unit for supervising the project work.

7.10.4 Course Structure

The course comprises lectures, practical exercises, assigned reading, home tasks, tutorials, seminars, group discussions and project studies on Statistical Methods and SQC Techniques. Project work runs concurrently outside the class hours in the candidate's own organization.

A fee of Rs. 1500/- is charged.

The course is now under review.

7.11 Intensive Course in Programming and Application of Electronic Computers

(This course will be notified separately, if offered)

7.11.1 Scope

The objective of this course is to impart a thorough knowledge of systems and programming work in connection with the use of electronic digital computers. It is a full-time course comprising lectures, demonstrations, directed reading and practical assignments. The training is of a general nature and not restricted to the particular system of machines available in the Institute. The course is offered in Kolkata, subject to availability of facilities.

7.11.2 Duration and Class Hours

The duration of the course is 10 weeks. Classes are ordinarily held during the day between 1000 and 1700 hours. Depending on availability of the computer system, practical classes may be held at any time between 0700 and 2200 hours. The course is usually conducted during October-December.

7.11.3 Eligibility

Persons with good academic record, preferably with knowledge of mathematics up to the graduate level, and currently engaged in research and/or related activities are eligible for admission to the course.

7.11.4 Course Structure

The course covers Fundamentals of Digital Electronic Computers, Conventional Computing Equipment and Programming in a High Level Language. The course structure is under review. A course fee of Rs. 1500/- is charged.

7.12 Junior/Senior Research Fellowship (JRF/SRF)

7.12.1 Research Fellowships in Statistics, Mathematics, Quantitative Economics, Computer Science, and Quality, Reliability & Operations Research (QROR).

7.12.1.1 Scope

The Institute offers Junior Research Fellowships to candidates in Statistics, Mathematics, Quantitative Economics, Computer Science, and Quality, Reliability & Operations Research (QROR). A candidate admitted as a Junior Research Fellow is expected to take research courses and also engage in original research-work in one of the above areas under the guidance of a supervisor appointed by the Institute, culminating in a doctoral thesis to be submitted for the Ph.D. degree of the Institute. Candidates making satisfactory progress towards the above goal are eligible to register for the Ph.D. degree of the Indian Statistical Institute. At the end of the second year, the Junior Research Fellows are assessed for the award of Senior Research Fellowships. The total duration of Junior and Senior Research Fellowships shall not **exceed 5 years**.

A Special Research Fellowship of Rs. 15000 per month (JRF-level)/ Rs. 18000 per month (SRF-level) is also available for outstanding candidates in each of the following subjects: (i) Statistics, (ii) Mathematics, (iii) Computer Science, (iv) Quantitative Economics and (v) Quality, Reliability & Operations Research.

7.12.1.2 Centre

The names of the centres along with the respective subjects in which junior/senior research fellowships are being offered this year are given below.

Centre	Subject
Kolkata	Statistics, Mathematics, Quantitative Economics, Computer Science, and Quality, Reliability & Operations Research (QROR)
Delhi	Statistics, Mathematics, Quantitative Economics, and Quality, Reliability & Operations Research (QROR)
Bangalore	Statistics , Mathematics and Computer Science
Chennai	Quality, Reliability & Operations Research (QROR)
Hyderabad	Quality, Reliability & Operations Research (QROR)

7.12.1.3 Eligibility for admission to the JRF programme

Statistics : (i) A good academic record with M.Stat., M.A./M.Sc. or equivalent degree in Statistics or, (ii) outstanding mathematical maturity with B.Stat./B.Math., B.A./B.Sc. or equivalent degree with Statistics as the main subject.

Mathematics : (i) A good academic record with M.Stat., M.Math., M.A./M.Sc. or equivalent degree in Mathematics or, (ii) outstanding mathematical maturity with B.Stat./B.Math., B.A./B.Sc. or equivalent degree with Mathematics as the main subject.

Quantitative Economics : (i) A good academic record with M.S.(QE), M.Stat., M.A./M.Sc. or equivalent degree in Statistics/ Mathematics/ Economics/ Econometrics or, (ii) outstanding mathematical maturity with B.A./B.Sc. degree with Economics as the main subject. A candidate possessing a Master's degree in any subject with Mathematics/Statistics at B.A./B.Sc. (Pass) level will also be eligible.

Computer Science : A good academic record with M.E./ M.Tech. or equivalent degree in Electronics/ Telecommunication/ Radio Physics/ Computer Science/ Electrical Engineering/ Microwave Communications/ Information Technology/Bioinformatics/Biotechnology with Mathematics as a compulsory subject or a good academic record with M.Sc./ M.C.A./ M.A. or equivalent degree in Physics/ Mathematics/ Applied Mathematics / Statistics / Electronic Sciences / Computer Science / Atmospheric Science / Information Technology/

Bioinformatics/Biotechnology with Mathematics as a compulsory subject at the graduate level. Outstanding candidates having B.E./ B.Tech. or equivalent degree in the above subjects will also be eligible.

Quality, Reliability & Operations Research (QROR). : A good academic record with M.Tech. / M.E. / M.S. / M.Phil. or equivalent degree in Quality / Reliability / Operations Research or a good academic record with M.Stat. / M.Sc. / M.A. or equivalent degree in Mathematics / Statistics / Physics with Mathematics as a compulsory subject at the graduate level. Outstanding candidates having B.E. / B.Tech. or equivalent degree in the above subjects will also be eligible.

7.12.1.4 Selection Procedure

Subject to satisfying the eligibility criteria, the selection of candidates for JRF is strictly based on merit as judged by academic record, performance in selection tests and interviews.

Note **:** The candidates who have been awarded research fellowship by CSIR/NBHM can seek an interview any time of the year and, on the basis of performance in the interview, they are admitted as CSIR/NBHM fellows working at ISI.

7.12.1.5 Current Research Interests in Statistics, Mathematics, Quantitative Economics , Computer Science, and Quality, Reliability & Operations Research (QROR) at Different Centres

Kolkata

Statistics **:** Asymptotic Theory in Statistics, Decision Theory, Statistical Inference: parametric, non-parametric and semi-parametric, Bayesian Analysis, Model Selection, Resampling Plans, Sequential Analysis, Sequential Plan, Multivariate Analysis, Parametric/Non-parametric Regression Analysis, Robustness, Discrete and Categorical Data Analysis, Linear Models, Parametric/Nonparametric Discriminant Analysis, Biostatistics, Environmental Data Analysis, Survival Analysis, Reliability, Directional Data Analysis, Growth Curve Modelling, Exploratory Data Analysis, Ranking and Selection, Constructional and Combinatorial Aspects of Designs, Optimal Designs, Sampling Theory and Surveys. Inference in High Dimensional Models. Applications of Statistics in Geology, Molecular Biology, Human Genetics, Social Sciences and Industrial (Quality) Engineering; GIS Applications, Statistical Computation, Cryptology, Statistical Pattern Recognition, Image Analysis, HIV/AIDS Modelling. Clinical Trial, Majorisation, Brain Mapping. Stochastic Processes, Probability Inequality, Large Deviations, Random Matrices, Extreme Value Theory, Heavy Tails and Long Range Dependence.

Mathematics **:** Functional Analysis, Geometry of Banach Spaces, Algebraic and Differential Topology, Symplectic Topology, Transformation Groups, Harmonic Analysis, Commutative Algebra: Affine fibrations, projective modules and allied areas, Combinatorics, Graph Theory, Mathematical Logic, Set Theory and Descriptive Set Theory, Spectral Theory of Differential Operators, Noncommutative Geometry, Complex Algebraic Geometry, Cryptology, Stochastic Calculus, Financial Mathematics, Markov Chains, Diffusion, Limit Theorems, Stochastic

Approximations, Random Matrices, Extreme Value Theory, Heavy Tails and Long Range Dependence.

Quantitative Economics **:** Microeconomics, Macroeconomics, International Trade, Development Economics, Welfare Economics, Game Theory, Voting Theory, Contract Theory, Industrial Organization, Financial Economics, Finance, Convergence, Social Choice and Political Economy, Public Economics, Economic Growth, Indian Economic Problems, Agricultural Economics, Environmental Economics, Time Series Econometrics, Financial Econometrics, Empirical/Applied Econometrics, Poverty and Inequality, polarization.

Computer Science **:** Computer Networks - Ad-hoc, Wireless Sensor, Wireless Mesh, UMTS Network Design; Parallel and Distributed Computing, Mobile Computing, Cluster Computing, Parallel/Distributed Architectures and Algorithms; Nanotechnology and Gigascale Integration, Electronic Design Automation Algorithms and Testing, Biochips and Nano-biosystems, Intellectual Property Protection of SoCs, Quantum Computing, Fault Tolerance; Computational Geometry, Graph Theory, Combinatorial Optimization, Algorithms and Computational Complexity; Computational Molecular and Systems Biology, Bioinformatics; Pattern Recognition, Machine Learning, Artificial Intelligence, Web Intelligence and Web Mining, Text Mining, Data Mining, Information Retrieval, Natural Language Processing, Computational Linguistics; Computer Vision, Digital Document Processing, Image and Video Processing, Content-based Image Retrieval, Graphics Recognition, Biomedical Image Processing, Video Surveillance; Speech and Signal Processing; Artificial Neural Nets, Case Based Reasoning, Evolutionary Computing, Fuzzy Sets and Systems, Fuzzy Control, Granular Computing, Rough Sets, Soft Computing, Swarm Intelligence, Uncertainty Analysis, DNA-Computing; Mathematical Morphology, Fractals, Wavelets, Chaos; Artificial Immune System, Neurodynamics; Digital Watermarking; Atmospheric Science, Remote Sensing; Theory and Applications of Cellular Automata; Cryptology, Coding Theory, Information Theory,

Quality, Reliability & Operations Research (QROR): Business Analytics, Six Sigma and Lean Six Sigma, Mathematical Programming, Reliability Models, Process Control, Support Vector Machines.

Delhi

Mathematics **:** Algebraic groups over arbitrary fields. Algebras with involutions. Galois cohomology. Non-associative algebras and exceptional algebraic groups. Quadratic forms. Quantum groups, non-commutative geometry, operator algebras, KK-theory. Analysis and geometry of matrices and linear operators. Generalized inverse of a matrix. Matrices and graphs. Number theory, Diophantine equations, irreducibility of polynomials, prime numbers. Cryptography.

Probability **:** Combinatorial optimization problems. Extreme value theory. Interacting particle systems. Markov chains. Markov processes and martingale problems. Percolation theory. Random graphs, probability on trees. Random walks in random environments. Stochastic differential equations. Stochastic filtering theory. Stochastic control. Urn models.

Statistics **:** Computational biology. High-dimensional data. Penalized regression. Resampling methods. Reliability. Non-linear regression. Non-parametric inference. Statistical computing. Statistical graphics. Statistical signal processing. Surrogate data. Survival analysis.

Quantitative Economics **:** Optimization Theory, Game Theory and Applications, Mechanism Design, Auction Theory, Choice Theory, Industrial Organization, International Trade and Finance, Macroeconomic Theory, Growth Theory and Empirics, Applied Econometrics, Political Economy, Empirical and Theoretical Development Economics, Economics of Education, Health Economics, Agricultural Economics, Environmental and Natural Resource Economics, Experimental Economics, Economics of Terrorism and Conflict.

Quality, Reliability & Operations Research (QROR) **:** Complementarity Problems, and Game Theory.

Bangalore

Statistics and Mathematics **:** Design of Experiments, Bayesian Statistics, Survey Sampling. Algebraic Geometry, Algebraic Groups, Coding Theory, Ring theory, Operands, Finite Geometry, Finite Groups, Buildings, Number Theory, Topology, Combinatorial Topology, Complex geometry, Differential geometry. Probability Theory, Stochastic Processes, Diffusion Processes, Reflected Diffusion, Martingale problems, Interacting particle systems, Probability measures on groups. Functional Analysis, Geometry of Banach spaces, Operator Theory, Operator Algebras, Quantum Probability, Hilbert Modules.

Computer Science **:** Mathematical Morphology, Digital Geometry, Earth Systems Science, Spatial Informatics, Theoretical GISci and Geocomputation, Satellite Remote Sensing Data Analysis, Digital Image Processing, Digital Geographics, Modeling the behavior Complex Terrestrial Systems via Chaos and Bifurcation Theories, Fractals and Multifractals, Computational Neuroscience (Brain Signal Modeling), Brain Functions Modeling, Human EEG Processing, Small Networks Modeling, Information Granulation, Granular Computing, Pattern Recognition, Machine Learning, Image and Video Processing, Soft Intelligence Computing, Computational Intelligence.

Hyderabad

Quality, Reliability & Operations Research (QROR): Operations Research and Mathematical Modelling.

Chennai

Quality, Reliability & Operations Research (QROR): Linear Complementarity Problems, and Game Theory.

Computer Science: Theoretical Computer Science, Cryptography

7.12.2 Junior/Senior Research Fellowships in Other Subjects

7.12.2.1 Scope

The Institute also offers Junior/Senior Research Fellowships in several areas of Natural Sciences and Social Sciences. However, candidates working for Ph.D. in any area other than the five mentioned in Section 7.11.1 need to register with other Universities/Institutes for their Ph.D. A student is initially admitted as a Junior Research Fellow. After two years of satisfactory progress, the Junior Research Fellows are assessed for the award of Senior Research Fellowships. The combined duration of the Junior and Senior Research Fellowships is **five** years. The areas in which the Institute wants to recruit JRFs this year and the respective eligibility conditions for applying for admission are as follows.

(a) **Physics and Applied Mathematics**: Quantum Mechanics, Condensed Matter Theory, High Energy Physics, Quantum Field Theory, Cosmology and Astrophysics.

Eligibility : A good academic record with M.Sc. in Physics/Mathematics/ Statistics.

(b) **Agriculture and Ecology**:

(i) Crop-weather relationships

Eligibility : A good academic record with M.Sc. in Agriculture with specialization in Agronomy.

(ii) Crop-weather modelling

Eligibility : A good academic record with M.Sc/M. Stat or equivalent degree in Statistics.

(iii) Invasive plant ecology

Eligibility : A good academic record with M.Sc. in Botany with specialization in Plant Physiology and Biochemistry OR M. Sc. In Environmental Sciences

(c) **Sociology**: Agricultural and Rural Development, Development Studies, Labour Studies, Gender studies.

Eligibility : A good academic record with M.A./M.Sc or M. Phil. or equivalent degree in Development Studies / Sociology / Economics / Agricultural Economics.

(d) **Geology**: Sedimentology, Geomorphology, Quaternary Geology, Vertebrate Paleontology, Structural Geology.

Eligibility: A good academic record with M.A./M.Sc. in Geology / Applied Geology/ Geophysics/ Remote Sensing and GIS or other equivalent..

(e) **Biological Anthropology**: Bio-cultural dimensions of aging: health and physical activity.

Eligibility: A good academic record with a M. Sc. in Anthropology with specialization in Biological/Physical Anthropology.

(f) Human Genetics:

(i) Genomics.of oral cancer

Eligibility: A good academic record with a M. Sc. or equivalent in Biochemistry/Biophysics/ Genetics/Biotechnology/Molecular Biology.

(ii) Statistical genetics

Eligibility: A good academic record with a M. Sc./M. Stat. or equivalent degree in Statistics.

(Candidates applying for research fellowships in this subject i.e., in (f)(ii) are required to appear for the JRF in Statistics admission examination of the Institute and mention their

interest in pursuing research in Human Genetics Unit. They should NOT appear for the JRF in Human Genetics examination.)

(g) **Library and Information Science**

Eligibility: A consistently good academic record with first or high second class in M. S. (LIS) awarded by the Indian Statistical Institute or Associateship in Documentation and Information Science of the Indian Statistical Institute or NISCAIR/INSDOC or its equivalent degree (such as Master's degree in Library and Information Science from any University) with at least 55% marks in undergraduate programme.

(h) **Psychology:** Cognitive Psychology, Organizational Psychology, Educational Psychology, Personality and Developmental Psychology, Rural Psychology and Mental Health.

Eligibility: A good academic record with M.A./M.Sc. in Psychology/Applied Psychology.

(i) **Linguistics:** Corpus Linguistics, Computational Linguistics, Applied Linguistics, Cognitive Linguistics, Translation Studies.

Eligibility: A consistently good academic record with a Bachelor's Degree in Linguistics/English as the Honours/full subject and First Class or high Second Class in Master's Degree in Linguistics (with specialization in Applied Linguistics/Language Teaching/ Lexicography/ Field Linguistics/ Computational Linguistics/ Translation Studies/ Discourse Study)

7.12.2.2 Centre

The names of the centres along with the respective subjects in which research fellowships in other subjects are being offered this year are given below.

Centre	Subject
Kolkata	Physics and Applied Mathematics, Agriculture and Ecology, Sociology, Geology, Human Genetics, **Psychology,** and **Linguistics.**
Bangalore	Library and Information Science

7.12.2.3 Selection Procedure

Subject to satisfying the eligibility criteria, the selection of candidates for JRF is strictly based on merit as judged by academic record, performance in selection tests and interviews.

   The candidates who have been awarded fellowship by the CSIR/NBHM can seek an interview any time of the year and, on the basis of performance in the interview, they are admitted as CSIR/NBHM fellows working at ISI.

7.13   Specialist Development Programme (SDP) in Statistical Quality Control and Operations Research (This course will be notified separately, if offered.)

7.13.1 Scope

The programme is intended to develop professionally competent specialists in Quality Control and Operations Research and to provide careers as successful practitioners in the field through

on-the-job training and guided development. The programme is offered at the SQC & OR Units of the Institute in Bangalore, Baroda, Mumbai, Kolkata, Coimbatore, Delhi, Hyderabad, Chennai and Pune.

7.13.2 Duration

The duration of the programme is two years. The programme generally starts in January every year.

7.13.3 Eligibility

Candidates with (a) consistently good academic record with (i) a first class or high second class Master's degree, or equivalent qualification in a relevant subject, or (ii) a good technological degree, and (b) Diploma in SQC & OR of the Indian Statistical Institute or at least one year's specialized post-graduate training in the field of SQC & OR in Industry with adequate applied work evidenced from certified project reports, are eligible. Both (a) and (b) are essential.

Holders of M.Tech.(QROR) degree of the Indian Statistical Institute may be admitted to the second year of the SDP.

7.13.4 Selection Procedure

All candidates are admitted through a selection test and an interview.

7.13.5 Programme Structure

The participants are given specific field assignments involving consultation, training, applied research etc. including responsibilities for independent projects involving organization and development of QC systems. The programme consists of on-the-job training together with occasional refresher and development courses on various topics of importance to the profession.

7.13.6 Progress Appraisals

The progress of the participants is appraised from time to time both by their immediate supervisors and expert panels. At the end of the first year an annual evaluation and appraisal of the progress is done by expert teams. If the progress is found satisfactory the participant is promoted to the second year, otherwise the fellowship is terminated with immediate effect.

For further details on the programme, the intending candidates should write to the **Head, SQC and OR Unit, Indian Statistical Institute, 203 B.T. Road, Kolkata 700 108.**

7.14   Courses of the International Statistical Education Centre (ISEC)

The International Statistical Education Centre (ISEC) is operated by the Indian Statistical Institute under the auspices of the Government of India. The main purpose of the Centre is to train selected officials, teachers and research workers from countries of the Middle-East, South and South-East Asia and the Far-East and from the Commonwealth countries of Africa. Training is imparted in theoretical statistics and various aspects of applied statistics. A 10-month regular course leading to Statistical Training Diploma is held from June every year. In addition, special courses of varying durations are sometimes organized in a particular field for individuals/small groups of individuals. Facilities are also available for advanced study and research work by senior statisticians from abroad.

The courses are open mainly to Government-sponsored candidates. Further information regarding this course may be obtained from **Member-Secretary, Board of Directors, ISEC, Indian Statistical Institute, 203 B.T. Road, Kolkata 700 108.**

7.15 Central Statistical Organization (CSO) Courses

These courses are organized by the Central Statistical Organization (CSO) of the Government of India, jointly with the Indian Statistical Institute, and are designed to equip statistical officers and probationers of the Indian Statistical Service with advanced statistical methods and to enable them to undertake higher responsibilities in their departments.

Further information regarding the courses may be obtained from **Director General, Central Statistical Organization, Jeevan Prakash Building, 25 Kasturba Gandhi Marg, New Delhi 110 001.**

7.16   Doctoral Awards

7.16.1 Doctor of Philosophy (Ph.D.)

The degree of Doctor of Philosophy is awarded to a candidate for original contribution in a chosen field of research in the areas: Statistics, Mathematics, Quantitative Economics, Computer Science, and Quality, Reliability & Operations Research (QROR). For this purpose, it is necessary for any candidate to register for this degree under a supervisor and subsequently submit a thesis embodying his/her research work for evaluation by a panel of examiners.

Eligibility conditions for registration as a candidate for the Ph.D. degree are available on the website (http://www.isical.ac.in/~deanweb/phdrules.html).

7.16.2 Doctor of Science (D.Sc.)

This is an award for outstanding published work.

Eligibility **:** The D.Sc. degree is awarded only in exceptional cases on the basis of outstanding published work. Only those who satisfy one of the following requirements are considered for the award.
(i) B.Stat.(Hons.)/B.Math.(Hons.) degree or the Statistician's diploma of the Indian
Statistical Institute and at least eight years of independent research work in Statistics.
(ii) M.Stat. degree or Certificate of successful completion of the Two/Three-year
Advanced Statistician's Course of the Indian Statistical Institute and at least four years of independent research.
(iii) Ph.D. degree of the Indian Statistical Institute and at least two years of subsequent
research.
(iv) At least eight years of research work in the field of Statistics after the Bachelor's
degree of a recognized university or institute of which at least one year of work must be at the Indian Statistical Institute.

All correspondence regarding registration and other matters connected with Ph.D. and D.Sc. degrees may be addressed to **Convener**, **Ph.D. - D.Sc. Committee, Indian Statistical Institute, 203 B.T. Road, Kolkata 700 108**.

7.17   Research Associateship

The Institute recruits Research Associates from time to time, for its different Divisions/Units. This depends on the availability of bright post-doctoral fellows having potential for being absorbed as lecturers/assistant professors in the Divisions/Units.

8   Hostel

The Institute has hostels for the students in its premises in Kolkata, Delhi, Bangalore, Chennai, and Tezpur. However, it may not be possible to accommodate all degree/diploma students in the hostels. Limited medical facilities are available free of cost at all campuses.

9   Placement of Students

Students who have undergone the B.Stat.(Hons.), B.Math.(Hons.), M.Stat., M.Math., M.S.(QE), M.Tech.(CS), M.Tech.(QROR) and other degree, diploma/certificate courses of the Institute and those having the Ph.D. degree of the Institute are now well-placed in government and semi-government departments, public and private sector undertakings, industries and research/educational institutions, both in India and abroad. Most of the students of the Institute get employment offers or admission to some Ph.D. programmes even before they complete the qualifying degree examinations.

There is a Placement Committee in Kolkata, which arranges campus interviews by prospective employers. Campus interviews are also organized at ISI Delhi and Bangalore Centres.

10   INSTRUCTIONS FOR FILLING IN THE APPLICATION FORM

10.1 Applicants are advised to study the prospectus carefully and satisfy themselves that they are eligible for admission to the course/fellowship for which they are applying. If at any stage it is found that a candidate does not satisfy the eligibility conditions or the information furnished in the application is incorrect, the application will be cancelled. Those who have completed or are due to complete the qualifying examinations for which results are not yet published, may also apply for admission; if selected, their admission to a course or fellowship will be provisional pending the announcement of results. In such cases, however, their applications will be cancelled if the final examinations are not completed before **29 June 2012**. This date may be relaxed by the Institute in case of candidates with outstanding academic record and performance in the selection tests and interviews. **If a student had failed in a programme of the Institute and was not allowed to repeat it, he/she is not eligible for re-admission to the same programme.**

10.2   The application form should be filled in carefully and legibly. Instructions given below should be strictly followed.

10.3 Do not write in the space marked **"*For office use only*"**.

10.4 Candidates should affix a copy of their recent stamp size photograph, at the top of the application form at the place indicated. Candidates should sign across the photograph at the bottom after it is affixed, so that a part of the signature appears outside the photograph. Please note that **another identical copy** of the photograph is to be affixed on the Admit Card when you receive it.

10.5 The following relate to specific items in the application form :

10.5.1 *Items* **1** *and* **2.** Leave one box blank between words. The address to which

you want letters to be sent is to be written here in CAPITAL LETTERS along with telephone number, mobile number and e-mail address, if any. **This address should also be written legibly in CAPITAL LETTERS along with telephone number & mobile number, if any, on two (2) envelopes** $\left(\text{not less than } 10.5'' \times 5.5''\right)$ **without affixing any stamp and these envelopes are to be sent along with the application form duly filled in**. **The syllabi, sample questions and the admit card for the selection tests will be sent in these envelopes.**

10.5.2 *Item* **3.** Choose the course (or fellowship) you want to apply for and write the corresponding code (see the table below) in the boxes provided. **Selection tests for the courses/fellowships will be held on the same day**. In view of this, candidates are advised to send *only one application* for the session **2012-2013**.

Candidates selected for Junior Research Fellowships may be asked to join at a place other than the one opted for, if necessary.

Code	Course
BSC	B.Stat.(Hons.) (Kolkata)
BMB	B.Math.(Hons.) (Bangalore)
MSD	M.Stat. (Delhi)
MSM	M. Stat. (Chennai)
MMC	M.Math. (Kolkata)
MEC	M.S. in Quantitative Economics (Kolkata)
MED	M.S. in Quantitative Economics (Delhi)
MSL	M.S. in Library and Information Science (Bangalore)
MTC	M. Tech. in Computer Science (Kolkata)
MTQ	M. Tech. in Quality, Reliability and Operations Research (Kolkata)
DST	Post-Graduate Diploma in Statistical Methods with Applications (Tezpur)
	Junior Research Fellowship for Research Course in
JSC	Statistics (Kolkata)
JSD	Statistics (Delhi)
JSB	Statistics (Bangalore)
JSM	Statistics (Chennai)
JMC	Mathematics (Kolkata)
JMD	Mathematics (Delhi)
JMB	Mathematics (Bangalore)
JEC	Quantitative Economics (Kolkata)
JED	Quantitative Economics (Delhi)
JCO	Computer Science (Kolkata, Bangalore, Chennai)
JQR	Quality, Reliability and Operations Research (Kolkata, Delhi, Chennai, Hyderabad)
JLI	Library and Information Science (Bangalore)
JBH	Biological Anthropology (Kolkata)
JPH	Physics and Applied Mathematics (Kolkata)
JAE	Agriculture and Ecology (Kolkata)
JSO	Sociology (Kolkata)
JGE	Geology (Kolkata)
JPS	Psychology (Kolkata)
JLN	Linguistics (Kolkata)
JHG	Human Genetics (Kolkata)

10.5.3 *Item* **4.** Choose the examination centre where you want to appear for the selection test and write the corresponding code (see the table below) in the boxes provided. Selection tests for admission will be conducted at the centres given in the following table. Candidates should name three centres in their order of preference.

Code	Centre	Code	Centre	Code	Centre
BG	Bangalore	GT	Guntur	MB	Mumbai
BP	Bhopal	GH	Guwahati	NG	Nagpur
BH	Bhubaneswar	HY	Hyderabad	PT	Patna
BD	Burdwan	KH	Kharagpur	RN	Ranchi
CH	Chandigarh	CC	Kolkata	SG	Siliguri
CN	Chennai	LU	Lucknow	ST	Surat
CO	Cochin	ML	Malda	TZ	Tezpur
DH	Delhi	MN	Mangalore	VN	Varanasi
				VP	Visakhapatnam

10.5.4 Item 5. Mention your age in years and date of birth in the boxes provided.

10.5.5 *Items* **6.** Choose the alternative which applies to you and put a tick (✓) in the box provided.

10.5.6 *Items* **7 & 8.** Choose the alternative which applies to you and put a tick (✓) in the box provided. Relevant documents (see Section 4, pages 6 and 7 of this prospectus for details) must be produced at the **time of interview**, failing which the candidates will not be considered for admission.

10.5.7 Item 9. Choose the alternative which applies to you and put a tick (✓) in the box provided.

10.5.8 Item 14 (a). It is most important to fill in this block accurately and completely. Do not forget to include details about the qualifying examination, which you have completed or are due to complete and for which results are not yet published. If you had Mathematics or Statistics as a major subject of study at any stage, be sure to indicate it in the column marked "Subjects". **Do not send any original documents or copies with the application.**

10.5.9 Item 14 (b). If you are a candidate applying for B.Stat. (Hons.)/ B.Math. (Hons.) and have been selected for joining **International Mathematics Olympiad (IMO) Training Camp**, then write the year of clearing in the space provided. (*see pages 9 and 11*)

10.5.10 Item 14 (c). If you are a candidate applying for M.Tech (CS) and have a valid **GATE** score , then write all the required information in the spaces provided.

10.5.11 Item 15. In case you choose to send the downloaded application form (available on our website), please send the Bank Draft along with the filled-in application form, after entering the Bank Draft details in **Item 16** of the application form.

10.6 Submission of application :

10.6.1 *Two Self-addressed envelopes* $\left(\text{not less than } 10.5'' \times 5.5''\right)$ are to be enclosed with the application form. The applicant should write *his/her address* legibly in CAPITAL LETTERS *with telephone number & mobile number, if any,* on these envelopes. Postal stamps need not be affixed. The Admit Card, sample questions etc. will be sent in these envelopes.

10.6.2 An Acknowledgement Card is attached with the application form. The applicant should write his/her address legibly on this and affix Rs.6/- stamp on the Acknowledgement Card.

10.6.3 The applicant must send the following documents:

(i) **Application form duly filled in.**

(ii) Two Self-addressed envelopes $(\text{not less than } 10.5'' \times 5.5'')$. *Self- address must be written in CAPITAL LETTERS with telephone number.*

(iii) Self-addressed Acknowledgement Card affixed with Rs.6/- stamp, OR,
 One self-addressed Post Card (only if the application form has been downloaded from the website (http://www.isical.ac.in/~deanweb)).

The downloaded application form should be sent along with a Bank Draft of Rs. 500/- (Rs. 250/- only for reserved categories of all programmes except Junior Research Fellowship programme) drawn in favour of Indian Statistical Institute, payable at Kolkata.

The above items should be placed in the **white envelope** and the applicant must submit it personally or send it by registered post with acknowledgement due, to reach the Dean of Studies not later than **05 March 2012.**

10.7   *Item* **14.** For M.Tech. in Computer Science, M.Tech. in Quality, Reliability and Operations Research, Part-time Certificate course in SQC* there is a provision for sponsorship of candidates by their employers. **In such cases, Item 14 is to be filled in by the candidate and a separate letter in the format given at the end should be sent by his/her sponsor after consulting the prospectus (see Section 10.13, page 42 of the Prospectus for the format)**. PLEASE NOTE THAT FOR THE PART- TIME CERTIFICATE COURSE IN SQC*, SPONSORSHIP IS ESSENTIAL.

10.8 Incomplete or, illegible applications or, those received after the due date, will not be considered.

10.9 Completed applications **must** reach the following address by **05 MARCH 2012**.

<div align="center">

DEAN OF STUDIES

INDIAN STATISTICAL INSTITUTE

203 BARRACKPORE TRUNK ROAD

KOLKATA 700 108.

</div>

_____
*See Section 2

10.10 After the application is received by the Institute, the candidate will be allotted a Registration Number and asked to take the selection tests without verification of his/her eligibility. The list of tests to be taken by the candidate as well as the address of the **Admission Test Centre** will be printed on the admit card. In all subsequent correspondence, the applicant should quote the **Registration Number** without which no correspondence will be entertained.

10.11 Candidates who fail to appear at the selection tests will not be considered for admission. On the basis of the performance in the selection tests and past academic records, a limited number of candidates will be asked to appear at an interview for final selection subject to verification of their eligibility with reference to original documents.

10.12 Sample Questions and/or the Syllabi for the Selection Tests, Instructions to the Candidates and the Addresses of the Selection Test Centres are sent to the candidates along with the Admit Card after the applications are processed. The Selection Test is scheduled to be held on **Sunday, 13 May 2012**. *In case you do not receive the admit card by* **April 27 2012**, please inform the Dean of Studies (e-mail: *isiadmission@isical.ac.in)*. In the event of your not receiving the Admit Card by the date of the selection test, please proceed to the Admission Test Centre of your first preference, with any communication you have received from us, such as Acknowledgement Card etc. Please take a recent stamp size photograph with you along with your photo identity proof. You may be allowed to write the Admission Tests in case your name appears in the list of candidates sent to the supervisor of the Centre. The addresses of the supervisors and/or the Selection Test Centres are given separately.

10.13   Format for sponsorship letter:

We sponsor the application for Mr./Ms ……………………………………………….... for the ………………….………… course. If selected for admission, the applicant will be available to undergo training for a period of ……………………………... years. We will abide by the conditions and rules for sponsored candidates mentioned in the prospectus.

A crossed cheque for Rs. ……………………………………………..………………. * in favour of 'Indian Statistical Institute' will be sent positively before the commencement of the course. Further, for the Part-time Certificate Course in SQC[†], facilities will also be given in our organization for carrying out project work during normal working hours under the guidance of the faculty of the Institute.

Place . . . .   ………………………………………

Date . . . .   Signature of the sponsoring authority

Designation . . . .

Address . . . .

 * Please consult the prospectus for duration, fees and other details of the course concerned.

[†] See Section 2.

Note : **Any dispute concerning ADMISSIONS : 2012-2013 shall be settled in Kolkata subject to the jurisdiction of the Kolkata High Court.**

11 Addresses of Admission Test Centres

Addresses of Admission Test Centres are as follows. Applicants are also advised to check their **Admit Cards** carefully for any last minute changes in the addresses of their test Centres.

BANGALORE (BG):
Test Hall:
Sri Jagadguru Renukacharya College of
Science, Arts & Commerce
No.9, Race Course Road,
(Ananda Rao Circle)
BANGALORE 560 009
(Phone : (080)22264952/22250245/22374005-6)
Centre Supervisor:
Prof. N S Narasimha Sastry
Head,
Indian Statistical Institute (Bangalore Centre)
8th Mile, Mysore Road
RV College Post, Bangalore 560 059
(Phone:(080)28483001 to 006/28433983)
Fax.: (080) 28484265
E-mail: nsastry@isibang.ac.in

BHOPAL (BP):
Test Hall:
The Bhopal School of Social Sciences,
Habibganj
BHOPAL (M.P.) 462 024
(Phone: (0755)2457283)
Centre Supervisor:
Dr. Fr. Joseph P. P.
Principal
The Bhopal School of Social Sciences,
Habibganj
BHOPAL (M.P.) 462 024
Email address : info@bsssbhopal.edu.in

BHUBANESWAR (BH):
Test Hall:
Department of Statistics
Utkal University,
BHUBANESWAR 751 004
Orissa
Centre Supervisor:
Prof. L. N. Sahoo
[Same as test hall address]
(Phone: (0674)2420529(R)/2583475 (O))
E-mail: lnsahoostatuu@rediffmail.com

BURDWAN (BD):
Test Hall:
Burdwan Municipal Girls' High School
Kalibazar,
BURDWAN (W.B.) 713101
(Phone: (0342)2662165)
Centre Supervisor:
Smt. Swapna Sinha
Headmistress,
Burdwan Municipal Girls' High School
[Same as test hall address]
 (Phone: (0342)2662165)

CHANDIGARH (CH):
Test Hall:
Department of Statistics,
Panjab University,
CHANDIGARH 160 014
(Phone: (0172)2541776/2534529/2534538)
Centre Supervisor :
Prof. Sangeeta Arora
Department of Statistics,
[Same as test hall address]
 (Phone: (0172)2534530& 541776)
 Cell: 09876366604
E-mail: sarora131@gmail.com

CHENNAI (CN):
Test Hall:
Anna Adarsh College for Women
A-1, II Street , Anna Nagar
CHENNAI 600 040
(Phone: (044)26212089/26280856)
Centre Supervisor:
Dr.G Ravindran
Head, SQC & OR Unit (Chennai)
Indian Statistical Institute
110, Nelson Manickam Road
Aminjikarai, Chennai 600 029
(Phone: (044)23740612/23740256)
Fax: (044) 43553839
E-mail: gravi@hotmail.com

COCHIN (CO):
Test Hall:
Department of Mathematics,
Math Building
Cochin University of Science & Technology,
COCHIN 682 022
(Phone: (0484)2862462/2575288)
Centre Supervisor:
Dr. Ambat Vijayakumar
Prof. & Head
Department of Mathematics,
Cochin University of Science & Technology,
COCHIN 682 022
Cell: 09447608851
E-mail: vijay@cusat.ac.in / vambat@gmail.com

DELHI (DH):
Test Hall:
i)   Suraj Bhan D.A.V. Public School
     F-10/15, Vasant Vihar,
     (Near D Block Market)
     New Delhi 110 057
     (Phone: (011) 26149082/ 26149371)

ii) D.A.V. Public School
     Sector – B, Pocket – 1,
     Vasant Kunj, (Near Fortis Hospital)
     New Delhi 110 070
     (Phone: (011)26892800/26898400)

iii) Sahoday School
     C-1, Safdarjung Development Area,
     (Near Jagan Nath Temple)
     New Delhi 110 016
     (Phone: (011)26512344)
Centre Supervisor:
Prof. Arup K. Pal
In-Charge, Students' Academic Affairs
Indian Statistical Institute (Delhi Centre)
7, S.J.S. Sansanwal Marg
Near Qutab Hotel,
Opposite Katwaria Sarai Bus Stop
New Delhi 110 016
(Phone : (011) 4149 3942)
Fax : (011) 4149 3981
E-mail: acadaff@isid.ac.in,

GUNTUR (GT):
Test Hall:
Hindu College High School,
Besides Hindu College
Vegetable Market Centre
GUNTUR 522 003,
Andhra Pradesh.
(Phone: (0863) 2220767)
Centre Supervisor:
Prof. G. V. S. R. Anjaneyulu
Department of Statistics
Acharya Nagarjuna University
Nagarjuna Nagar 522 510
GUNTUR (A. P.)
Cell: 09490114798
E-mail: gvsr_anjaneyulu@rediffmail.com

GUWAHATI (GH):
Test Hall:
Department of Statistics
Gauhati University, Gopinath Bardoloi Nagar,
GUWAHATI (Assam) 781 014
(Phone: (0361)2700288)
Centre Supervisor:
Prof. Dilip C. Nath
Tarun Nagar, 5 L, Main Lane
GUWAHATI (Assam) 781 005
(Phone :(0361) 2529857(R))
 Cell: 09435144485
E-mail: dcnath@rediffmail.com,
dilipc.nath@gmail.com

HYDERABAD (HY):
Test Hall:
St. Pious X Degree &
 P. G. College for Women
Snehapuri Colony, Lane Opp. HMT Bus Stop,
Nacharam Road,
HYDERABAD 500 076
(Phone: (040)27175786 /8233(Fax))
Centre Supervisor:
Dr. Ashis Kr Chakraborty
Head, SQC&OR Unit (Hyderabad)
Indian Statistical Institute
Street No. 8, Habshiguda
HYDERABAD 500 007 (A.P.)
(Phone : (040) 27153984/27171906)
Fax : (040) 27173602
E-mail; akchakraborty@rediffmail.com

KHARAGPUR (KH) :
Test Hall:
Hijli High School
IIT Campus,
KHARAGPUR,
Dist.-Paschim Medinipur
West Bengal, Pin.-721 302
(Phone : (03222)277350)
Centre Supervisor:
Shri Amitava Das
Asst. Teacher
Hijli High School
IIT Campus, Kharagpur,
Dist.-Paschim Medinipur
West Bengal, Pin.-721 302
Cell : 9434129599
E-mail: amitava599@gmail.com

KOLKATA (CC):
Test Halls:

i)   St. Paul's School
        &
        St. Paul's College
        33/1 Raja Rammohan Roy Sarani
        KOLKATA
        West Bengal -700 009
        (Phone: (033)23502499/)

ii)   Ananda Ashram Sarada Vidyapeeth
        104, B.T. Road, Bonhoogly
         KOLKATA
        West Bengal -700 108

iii)   St. Xavier's Collegiate School
        30, Park Street
        KOLKATA
        West Bengal -700 016
        (Phone: (033)22551171)

iv)   Khalsa Model Sr. Secondary School
        135, B.T. Road,
        Near Baranagar Station &
        Dunlop   Bridge
        KOLKATA
        West Bengal -700035
        (Phone: (033) 25775140)

LUCKNOW (LU) :
Test Hall:
Department of Statistics
Lucknow University
Lucknow (UP) 226007
(Phone: (0522) 2740146)
Centre Supervisor
Prof. Aqil Ahmad
Head, Department of Statistics
Lucknow University
LUCKNOW (UP) 226007
(Phone : (0522) 2740146)
Cell: 09415103310
E-mail: tqm.luck@gmail.com

MALDA   (ML) :
Test Hall:
Barlow Girls' High School (H.S.)
PO. Mokdumpur
P.S. English Bazar
MALDA
West Bengal - 732103
Phone: (03512) 252417
E-mail : bghsmalda@gmail.com
Centre Supervisor:
Smt. Pranati Das Gupta
Headmistress
Barlow Girls' High School (H.S.)
[Same as test hall address]
Phone: (03512) 252417
Cell: 09434052450
E-mail: pranati.dasgupta@gmail.com

MANGALORE (MN) :
Test Hall:
University College,
Hampanakatta,
MANGALORE -575001
Karnataka
(Phone & fax : (0824) 2424760
Centre Supervisor:
Principal
University College,
[Same as test hall address]
 (Phone & fax : (0824) 2424760 /
(0824) 2485262 (Res))
E-mail: ucmangalore@gmail.com

MUMBAI (MB):
Test Hall:
SNDT College of Arts and SCB College of
Commerce &   Science for Women
1, Nathibai Thackersey Road,
Churchgate,
MUMBAI 400 020
(Phone: (022)22093789/22031879)
Centre Supervisor:
Sri Ashok Sarkar
Head, SQC & OR Unit (Mumbai)
Indian Statistical Institute
3rd floor, Room No. 320, Old Central Govt.
Office Bldg.,101, Maharshi Karve Road
MUMBAI 400 020
 (Phone: (022) 22014588/22004574(O))
E-mail: isibombay@vsnl.com

NAGPUR (NG):
Test Hall:
Dept. of Management Studies & Research,
Third Floor,Tirpude College of Social Work,
1, Balasaheb Tirpude Marg, Civil Lines,
Sadar, NAGPUR 440 001
(Phone : (0712)2525781)
Fax: (0712)2543965
Centre Supervisor:
Mr. Milind V. Khasale ,
Qtr. No. 196, V.H.B. Colony
Chandan Nagar,
Medical Road, Nagpur 440 009
Cell: 09423164254
E-mail: khasale_milind@rediffmail.com

PATNA (PT):
Test Hall:
Rabindra Balika Vidyalaya
Road No. 2, Rajendra Nagar
PATNA 800 016
(Phone: (0612)2671159)
Centre Supervisor:
Prof. Prabhat P. Ghosh
Asian Development Research Institute (ADRI),
BSIDC Colony,
Off Boring-Patliputra Road,
Patna – 800 013
(Phone: (0612)2265649(O)/2673695 (R)),
Cell : 09431024906
E-mail: ppghoshadri@yahoo.co.uk

RANCHI (RN):
Test Hall:
Delhi Public School, SAIL Township,
P.O.: Dhurwa ,
RANCHI 834 004
JHARKHAND
Phone: (0651) 2441176/3291396
Fax : (0651) 2440707
Centre Supervisor:
Dr. Kishore Sinha
Professor & Head,
Department of Statistics,
Birsa Agricultural University
RANCHI 834 006
E-mail: skish55@yahoo.co.in

SILIGURI (SG):
Test Hall:
Department of Political Science
University of North Bengal
P.O. North Bengal University
DIST. DARJEELING
West Bengal - 734 013
Fax : (0353)2699001
Centre Supervisor:
Prof. Manas Chakrabarty
Department of Political Science
University of North Bengal
[Same as test hall address]
 (Ph: (0353)2776385),
Cell : 09434186555
E-mail: manas_slg@yahoo.com

SURAT (ST):
Test Hall:
Veer Narmad South Gujarat University
University Campus,
Udhana Magdalla Road,
SURAT (Gujarat) - 395 007
(Phone (0261) 2257911 (O) /
 2257906 (F))
Centre Supervisor:
Dr. Ravi M Gulati
Department of Computer Science
Veer Narmad South Gujarat University,
Udhana Magdalla Road,
SURAT (Gujarat) - 395 007
 (Phone (0261) 2257911 (O) / 2223063(R)
Cell: 09825181719

TEZPUR (TZ) :
Test Hall:
Indian Statistical Institute (North East Centre)
CSIC Building
Tezpur University Campus
Napaam,
TEZPUR (Assam) 784028
Phone (03712) 267296
Centre Supervisor:
Prof. S.M.Bendre
Head,
Indian Statistical Institute (North East Centre)
[Same as test hall address]
E-mail: smbendre@gmail.com

VARANASI (VN):
Test Hall:
New Lecture Theatre Complex
Faculty of Science
(Adjacent to Commerce Faculty Building)
Banaras Hindu University
VARANASI 221 005
(Phone: (0542)6702904)
Centre Supervisor:
Prof. V.K. Singh,
[Same as test hall address]
(Phone: (0542)6702905 (O)/2575428(R)),
Cell: 09415343030
E-mail: vijay_usha_2000@yahoo.com

VISAKHAPATNAM (VP):
Test Hall:
Department of Statistics
Andhra University
VISAKHAPATNAM (A.P.) 530 003
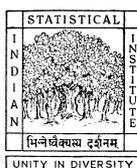(Phone: (0891)2844650)
Centre Supervisor:
Prof. K. Srinivasa Rao
Chief Editor, JISPS (Elect)
Editor, JMSAF,
Vice President, SIES,
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Andhra University
VISAKHAPATNAM (A.P.) 530 003
(Phone (0891) 2560761(R)),
Cell: 09949659959
E-mail: ksraoau@yahoo.co.in

A booklet entitled

TEST OF MATHEMATICS AT THE 10+2 LEVEL

consisting of a collection of questions of the B.Stat.(Hons.) admission tests of the past twenty years, collated and edited by the faculty of the Institute, has been published by **Affiliated East-West Press Pvt. Ltd., 105, Nirmal Tower, 26 Barakhamba Road, New Delhi 110 001.** Any query regarding availability of this book **must not be made to the Dean of Studies / Dean's Office.**

SAMPLE QUESTIONS OF THE LAST FEW YEARS FOR ALL THE PROGRAMMES ARE ALSO AVAILABLE ON THE INTERNET (*HTTP://WWW.ISICAL.AC.IN/~DEANWEB*).

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