

# Information and Announcements

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## SPIC Undergraduate Programme

### *Undergraduate Education at the SPIC Mathematical Institute*

This year (August, 1998) the SPIC Mathematical Institute (SMI), Chennai has started a 3-year integrated course in mathematics and computer science leading to a BSc degree. This programme is supported by the National Board for Higher Mathematics (NBHM) and the Indian Space Research Organization (ISRO).

The aim is to train, in the coming years, select groups of talented students for academic and professional careers requiring mathematical and computational skills.

**About SMI:** Southern Petrochemical Industries Corporation Ltd. (SPIC), one of the major industrial houses in India, set up a Science Foundation in 1986 to foster the growth of science and technology in the country. In 1989, a school of mathematics was created as part of the SPIC Science Foundation, with the aim of nurturing excellence in the mathematical sciences. In 1996, the School of Mathematics became an independent institution and changed its name to SPIC Mathematical Institute.

C S Seshadri, FRS, a mathematician of international repute, has been heading the institute since its inception and he leads the mathematics group.

P S Thiagarajan, who is well known internationally for his work in the theory of distributed computing, leads the Computer Science research group at SMI. At present there are six faculty members in mathematics and four in computer science.

The main areas of research in mathematics are algebraic geometry, algebraic groups, differential geometry and topology. Specification and verification of distributed systems, real-time and hybrid systems, theory of algorithms, and complexity theory are the main areas of research in computer science.

The Institute has been conducting successfully a PhD programme in mathematics and computer science. The programme is recognized by the Birla Institute of Technology and



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Science and the University of Madras. Six PhD degrees have already been awarded under the programme. Eight research scholars are currently working towards their PhD degrees.

**Funding for Research:** The Institute is recognized by the academic community in India and abroad as one of the important Indian centres for doing research in pure mathematics and theoretical computer science. It receives funding for research from agencies such as the Department of Science and Technology(DST), Council for Scientific and Industrial Research (CSIR), and the Indo-French Centre for the Promotion of Advanced Research (IFCPAR).

### **The BSc Programme: Curriculum**

The programme will consist of 3 years of study divided into 6 semesters with 2 semesters per year. The curriculum is comparable to the best that is available in the country at the undergraduate level. The courses will be offered by the faculty from both SMI and other reputed institutions such as the Institute of Mathematical Sciences, Chennai.

Algebra, calculus, analysis and topology form the core of the mathematics courses. The algebra course will cover group theory, linear algebra, theory of rings and Fields and Galois theory. The calculus courses will cover functions of one and several variables, vector calculus and first and second order differential equations. The analysis courses will cover real and complex analysis. The topology course will cover point set topology, fundamental groups and the theory of covering spaces.

As a point of departure from the usual curriculum, in the final year, the students have an option to select two topics from a list of specialized courses that includes number theory, representation theory, partial differential equations, differential geometry etc.

The computer science courses will emphasise the computational and foundational aspects of computer science. A basic course on the *fundamentals of programming* will be followed by one on programming languages in which students will be exposed to issues involved in the design of modern programming languages. A course in the design and analysis of algorithms and another in computability theory will emphasise the algorithmic aspects of computer science. There will also be a course in computer organization.

Courses in operations research and measure and probability will lie at the interface of mathematics and computer science.

The courses are so designed that at the end of the programme, the students will have a solid foundation in mathematics and computer science. In addition the students will have acquired



basic programming skills in PASCAL, C++, PERL and Java in a Unix-based computing environment.

### The Degree

The BSc degree will be awarded by the Madhya Pradesh Bhoj (Open) University. This is an Open University set up by the Madhya Pradhesh Government by an Act of the State Assembly in 1991. At present the Bhoj University is conducting undergraduate programmes in arts, science, commerce, health science, computer applications, management as also courses leading to Master of Business Administration and Master of Computer Applications.

The National Undergraduate programme at SMI will be guided by an expert committee that has been set up for this purpose.

### Eligibility

Students who have passed their 12th standard examination will be admitted on the basis of their performance in an entrance examination. This year the entrance examination was held in Chennai, Bhopal and Chandigarh. It is hoped to increase the number of centres in the coming years.

More information about SMI and the undergraduate programme can be had by writing to:

The Director, SPIC Mathematical Institute, 92, G N Chetty Road, T Nagar,  
Chennai 600 017, India.(email: office@smi.ernet.in)

(Information is also available at the web site <http://www.smi.ernet.in>)

The advertisement regarding the entrance examination for 1999 is expected to appear in all leading newspapers sometime in February 1999.

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Please Note: 1. On contents page and on page 94, line one, D R Choudhari should be read as D P Choudhari.

2. On page 93, last line should be read as ... ancient data, however this agreement were not there for a few stars.

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