

EMS ERCE LABEL  
Emerging Regional Centre of Excellence  
Institute for Advanced Studies in Basic Sciences  
(IASBS)

P.o.BOX 45195-1159  
Zanjan, Iran

**Director:**

Hamid Reza Kholesifard

**Person in charge with ERCE label:**

Rashid Zaare-Nahandi

**Introduction**

Institute for Advanced Studies in Basic Sciences (IASBS) was established in 1991 under the auspices of the then Ministry of Culture and Higher Education. Its goal is to bring about an atmosphere for creative education and dynamic research in which high-level teaching of the basic sciences would go hand-in-hand with fundamental and applied research.

IASBS is a degree granting institution with Master's and Doctoral programs only. IASBS also endeavors to engage in scientific, technical, and cultural cooperation with other educational institutions and the relatively young local industry, and to make a deliberate effort to have scientific and cultural impact on the region.

IASBS enjoys a liberal atmosphere and has hosted numerous schools and conferences attended by international students and faculties.

Department of Mathematics, established in 1994, offers M.Sc. and Ph.D. degrees in pure and applied mathematics and computer science. There are 34 full time faculty members, consisting of mostly young mathematicians and computer scientists.

**Activities according to ERCE label**

IASBS has got the ERCE label in 2014. The policy of IASBS to develop the Department of Mathematics according to ERCE label is two folded: research and education.

## Research

In research, IASBS is going to help researchers not only from IASBS but from the region, to find international collaborators to do researches in the main streams of world mathematics. For this reason, a 5 year program has been arranged for summer research schools as the following with collaboration of the Institute for Studies in Theoretical Physics and Mathematics (IPM). In these schools, some well-known researchers will be invited to teach short courses toward research problems and the participants will be divided to groups to start research and continue collaborations after the schools. All expenses of teachers and local expenses of students from the region and the institutes with ERCE label will be covered by IASBS and IPM.

### **Summer 2016: Blow-up algebras and related topics**

Aron Simis, University of Pernambuco, Brazil  
Bernd Ulrich, Purdue University, USA  
Abbas Nasrollah Nejad, IASBS

### **Summer 2017: Minimal Free Resolution of Monomial Ideals**

Juergen Herzog, University of Essen, Germany  
Aldo Conca, University of Genova, Italy  
Marc Chardin, University of Paris 6, France  
Rashid Zaare-Nhandi, IASBS

### **Summer 2018: Hilbert Function and Hilbert Coefficients in Local Rings**

Maria Evelina Rossi, University of Genova, Italy  
Juan Elias, University of Barcelona, Spain  
Aliakbar Yazdan Pour, IASBS

### **Summer 2019: Projective Schemes**

Orlando Vilamayor, University of Autonoma, Spain  
Herwig Hauser, University of Vienna, Austria  
Mohsen Asgharzadeh, IPM

### **Summer 2020: Computer Algebra**

Marc Moreno Meza, University of Western Ontario, Canada  
Gert-Martin Greuel, University of Kaiserslautern, Germany  
Ashkan Nikseresht, IASBS

## Education

In March 2015, Professor Paul Vaderlind and Professor Martin Singul visited IASBS as representatives of CDC-EMS. They had several meetings with directorate of IASBS and faculty members of the Department of Mathematics as well as students. They had sent a report to CDC-EMS and suggested helpful comments to IASBS to attract international students.

The potential countries in the region for attracting students for MSc and PhD studies in IASBS are Iraq, Afghanistan, Syria, Azerbaijan, Tajikistan and Turkmenistan. We have established some connection with universities in these countries. In the Kurdistan region of Iraq, there are several newly established small universities. Faculty members of these universities have mostly MSc degrees. They like to continue their studies for PhD level but they do not want to leave their universities. We have planned a program for them to study PhD in IASBS and teach in their universities simultaneously. In this frame, a person from Salahaddin University (Voria Soltanian) will start his PhD in the next year.

## **Conclusion**

IASBS strongly suggests to continue this program and establish a tight collaboration between institutes with ERCE label. Annual meetings between ERCE-labeled members to exchange reports, views and ideas will be helpful for all members.