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# Algebra, Number theory and their applications to Cryptography

 January 21, 2024  Comments Off

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بهشی ماتماتیک له کۆلیژی زانست له زانکۆی سه‌لاحه‌ددین-هه‌ولتیر به هاوکاری هه‌ریه‌که له ریکزراوانی نیوده‌ولهتی (CIMPA) و (RNTA) سکولتیک نه‌نجام ده‌دات له ژیر ناوئیشانی:

## Algebra, Number theory and their applications to Cryptography

له ریکه‌وتی: 25/02/2024 – 07/03/2024

The school will offer comprehensive instruction on contemporary cryptographic concepts rooted in number theory, algebra, and algebraic geometry. The curriculum will cover fundamental aspects of elementary and algebraic number theory, as well as advanced topics such as elliptic cryptosystems, and computational challenges relevant to cryptography. The lectures will delve into the application of these mathematical principles in cryptographic protocols and systems.

Kurdistan Regional Government (KRG), Iraq, and neighboring countries. The program will consist of six courses, span over 10 days of classes, for a total of 40 hours of classes and 14 hours of training sessions.

### **Application form:**

The deadline was February 8, 2023, we are no longer accepting applications.

### **Courses**

- **Grobner basis and application, Prof. Dr. Rashid Zaare Nahandi (IASBS, Zanjan)**
- **Introduction to Elliptic curves, Prof. Dr. Amos Turchet (Università Roma Tre)**
- **Elliptic curves Cryptography, Prof. Dr. Laura Capuano (Università Roma Tre)**
- **Number Theory, Prof. Dr. Lea Terracini, (Università di Torino)**
- **Elementary Algorithmic Number Theory, Prof. Dr. Laura Geatti (Università di Roma Tor Vergata)**

Week 1					
	Sunday	Monday	Tuesday	Wednesday	Thursday
8.00-9.00	Opening				
9.00-9.50	Number theory	Cryptography (F)	Grobner basis	Elliptic curves	Cryptography (A)
10.00-10.50	Number theory	Cryptography (F)	Grobner basis	Elliptic curves	Grobner basis
11.00-11.30	COFFEE BREAK				
11.30-12.20	Elliptic curves	Number theory	Cryptography (L)	Grobner basis	Grobner basis
12.30-14:30	LUNCH				
14.30-15.20	Algorithms	Elliptic curves	Algorithms	Cryptography (A)	Elliptic curves
15.30-16.20	Algorithms	Elliptic curves	Elliptic curves	Number Theory	Elliptic curves

Week 2					
	Sunday	Monday	Tuesday	Wednesday	Thursday
9.00-9.50	Cryptography (V)	Elliptic Cryptography	Number Theory	Algorithms	Number Theory
10.00-10.50	Cryptography (V)	Elliptic Cryptography	Algorithms	Algorithms	Elliptic Cryptography
11.00-11.30	COFFEE BREAK				
11.30-12.20	Grobner basis	Algorithms	Cryptography	Number Theory	Elliptic Cryptography
12.30-14:30	LUNCH				
14.30-15.20	Number Theory	Grobner basis	Elliptic Cryptography	Elliptic Cryptography	
15.30-16.20	Algorithms	Grobner basis	Elliptic Cryptography	Elliptic Cryptography	

In collaboration and generously funded by



### Advisory Committee of the School

Prof. Dr. Abdulkarim Yasin Karim (Salahaddin University-Erbil)

Prof. Dr. Herish Omer Abdullah (Salahaddin University-Erbil)

Prof. Dr. Nabil Adil Fakhre (Salahaddin University-Erbil)

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## Scientific Committee

Prof. Dr. Herish Omer Abdullah (Salahaddin University-Erbil)

Prof. Dr. Laura Capuano (Università Roma Tre)

Prof. Dr. Laura Geatti (Università di Roma Tor Vergata)

Prof. Dr. Lea Terracini (Università di Torino)

Prof. Dr. Valerio Talamanca (Università Roma Tre)

Dr. Andam Ali Mustafa (Salahaddin University-Erbil)

## Organizing Committee

Dr. Fuad Wahid Khdhr (Salahaddin University-Erbil)

Asst. Prof. Dr. Khwazbeen Saida Fatah (Salahaddin University-Erbil)

Asst. Prof. Dr. Rashad Rashid Haji (Salahaddin University-Erbil)

Asst. Prof. Dr. Sami Ali Hussein (Salahaddin University-Erbil)

Asst. Prof. Dr. Neshtiman N. Sulaiman (Salahaddin University-Erbil)

Asst. Prof. Dr. Gashaw A. Mohammed Saleh (Salahaddin University-Erbil)

Asst. Prof. Dr. Hardi Ali Shareef (University of Sulaimani)

Asst. Prof. Dr. Haval Mohammed Salih (Soran University)

Dr. Hero Waisi Salih (Salahaddin University-Erbil)

Shadan Abdulkadr Othman (Salahaddin University-Erbil)

Ala Omer Hassan (Salahaddin University-Erbil)

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Zhian Muhialdin Mahmood (Salahaddin University-Erbil)

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