



# AGYA Summer School in Numerical Simulation

18 - 28 August 2019

at Palestine Polytechnic University and Bethlehem University, Palestine

The Arab-German Young Academy of Sciences and Humanities (AGYA) in cooperation with Palestine Polytechnic University (PPU), Bethlehem University (BU), and Palestine Academy for Science and Technology (PALAST) are organizing the '**AGYA Summer School in Numerical Simulation**'. The AGYA Summer School takes place from **18 to 28 August 2019 at Palestine Polytechnic University, Hebron, and Bethlehem University, Bethlehem, in Palestine** and will be led by international experts. It is aimed at students and young researchers studying or researching in the fields of mathematics, physics, engineering, and related fields.

## Background:

Modern scientific and technological research is based on the interaction between various disciplines to make significant advancement in solving major problems in sciences and society at large. Numerical simulation and scientific computing pervades all scientific disciplines and has become an indispensable tool not only for engineering and applied sciences but also for social sciences. Simulation provides predictive results which replace otherwise expensive experiments and allows for virtual experiments where real experiments are not accessible. Applied and computational mathematics are interwoven with engineering, physical modeling, social sciences and computer sciences, thereby creating an interdisciplinary environment that fosters the development of simulation tools. With the combination of simulation tools, methods of large-scale data processing and artificial intelligence, a new era of research activities is launched worldwide.

## Goals:

The AGYA Summer School is expected to provide a thorough introduction to numerical simulation and mathematical computation on the one hand and establish multiple links between students and early-career researchers as well as between interdisciplinary German research groups and Arab experts on the other hand. Furthermore, it aims to encourage Arab universities to introduce similar interdisciplinary programs, given the importance of simulation in today's science and technology.



### Topics:

The summer school will offer lectures on continuum mechanics; numerical methods for fluids; iterative solvers and error estimates; finite element method for linear problems, non-linear elastic solids, and dissipative processes; applications in engineering and biomechanics; coupled problems electro-magneto-mechanical; numerical integration in the time domain; hardware and software related issues.

Lectures and training sessions will be enriched by presentations of participating AGYA members extrapolating the application of numerical simulation in their fields of expertise. Evenings will be reserved for informal scientific and social discussions among the participants and network activities.

### Lecturers:

Dr. Ahmad Hujeirat (Heidelberg University)

Prof. Dr. Carlo Sansour (Institut National des Sciences Appliquées Rennes)

Dr. Lisa Scheunemann (Prof. Schroeder, University Essen-Duisburg)

Dr. Alexander Schwarz (Prof. Schroeder, University Essen-Duisburg)

Dr. Sebastian Pfaller (Prof. Paul Steinmann, Friedrich-Alexander University Erlangen)

Prof. Dr. Edriss Titi (Cambridge University, Einstein Visiting Fellow in Berlin)

### Registration and Funding:

The AGYA Summer School on Numerical Simulation aims at students and staff members at an Arab or German University working in the fields of mathematics, physics, engineering, or related disciplines, who would like to discuss topics, methodologies and theories related to simulation with highly motivated colleagues from various fields.

If you are interested, please fill in the attached form and send it together with a short motivation letter (no more than 1 page) and your CV as one PDF file to:

[agyasummerschool@ppu.edu](mailto:agyasummerschool@ppu.edu)

**The closing date for applications is 5 August 2019.**

There is no participation fee. All travel and accommodation costs will be covered thanks to the generous support of AGYA.

**Note for students: Your participation in this summer school may be accepted as participation in an accredited course by your universities.**

### Organizing Committee:

Dr. Mohammad Adm – Head (AGYA, PPU)

Dr. Amjad Barham (PPU)

Dr. Huwaida Rabee (BU)

Dr. Ibrahim Masri (PALAST)