

# EMS Education Committee

## Mathematics Summer School for school students 2024

Date and Location: 22-27 July 2024, Rodon Mount Resort, Agros, Cyprus

Host organization: THALES Foundation of Cyprus and Cyprus Mathematical Society

[www.thalescyprus.com](http://www.thalescyprus.com)

### PROGRAMME and CONTENT

Learning room: ATHENA (Level 2)

#### Monday 22 July 2024

Arrivals, (transfers from airport)

Registration and accommodation room allocation

20.00 Welcome dinner (Hotel restaurant , Level 0)

#### Tuesday 23 July

09:30-10:45

- Welcome by the Chair of the EMS Education Committee
- EMS Education Committee Presentation and aims of the Summer School for school students
- Video play of the European Mathematical Society
- Introduction of student participants (**STUDENTS**)

10:45–11.00 Break

11:00-12:45 **Module 1 plus posting of problem challenge or project (Kramer1)**

13:00-14:30 Lunch

14:45-16:15 **Module 2 plus problem posting (Tzachristas1)**

16:30 -18.15 **Module 3 plus problem posting (Grozdev1)**

18.30 – 19.30 **Visit Rose Factory in Agros, walking (optional) or swimming**

20:00 Dinner

#### Wednesday 24 July

09:00-10:45 **Module 4 (Grozdev2)**

10:45-11:00 Break

11:00-12:45 **Module 5 (Kramer2)**

13:00-14:30 Lunch

14:45-16:15 **Module 6 (Tzachristas2)**

16:30-18:00 **Module 7 (Gogovska1)**

18:00-19:30 **Moderation: Discussion between students on the problems challenges (upto 90 min) Kramer, Tzachristas, Grozdev.**

20:00 Dinner

## Thursday 25 July

09:00-10:00 **Module 8 (Gogovska2)**

10:00- 11.30 **Module 9 (Christofides1)**

11:30-11:45 Break

11:45 – 13:00 **Module 10 (Kramer 3)**

13:00-14:00 Lunch

14:00 – 15.00 **Module 11 (Tzachristas3)**

15.15 - Excursion: Depart by bus to Kourion Ancient City and Limassol old town and Limassol MARINA

19.30 Dinner at Limassol MARINA

21:30+ Depart from Limassol to return to Agros

## Friday 26 July

09:15-10:45 **Module 12 (Tzachristas4)**

10:45-11:00 Break

11:00-12:00 **Preparation by students for their presentations**

12:00-13:00 **Presentations of works by students – Part 1 (in the presence of Kramer, Grozdev, Tzachristas)**

13:00-14:15 Lunch

14:30-16:00 **Presentations of works by students – Part 2 (in the presence of Kramer, Grozdev, Tzachristas)**

16:00 Drinks

16:00-16:30 **Closing ceremony, Awarding of Certificates** (room ATHENA)

16.30 Free time for some swimming

20:30 Farewell dinner at hotel

## Saturday 27 July

Organized Departures

## **Topics covered by each professor**

### **A. Jurg KRAMER (3 sessions)**

- The mystery of prime numbers (2 parts)
- Challenging problems to the students

### **B. Sava GROZDEV (2 sessions)**

- Schur's inequality and more,
- Tilings of the plane.
- Challenging problems to the students

### **C. Georgios TZACHRISTAS (4 sessions)**

4 sessions (2 hours each) of olympiad combinatorics

- Counting
- Invariants and Monovariants
- Dirichlet's Principle - Tiling Boards
- Game Theory
- Challenging problems to the students

### **D. Valentina GOGOVSKA (2 sessions)**

- Scientific Methods as a useful tool for acquiring structural knowledge
- Types of reasoning and inferences with examples

### **E. Demetris CHRISTOFIDES (1 session)**

Probabilistic combinatorics (one of the new topics expected in future IMO)