

# Advanced STEM Students

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## Tóm tắt nội dung

This text is a part of the series *Some Topics in Advanced STEM & Beyond*:

URL: [https://nqbh.github.io/advanced\\_STEM/](https://nqbh.github.io/advanced_STEM/).

Latest version:

- *Advanced STEM Students*.

PDF: URL: [https://github.com/NQBH/advanced\\_STEM\\_beyond/blob/main/teach/student/NQBH\\_student.pdf](https://github.com/NQBH/advanced_STEM_beyond/blob/main/teach/student/NQBH_student.pdf).

T<sub>E</sub>X: URL: [https://github.com/NQBH/advanced\\_STEM\\_beyond/blob/main/teach/student/NQBH\\_student.tex](https://github.com/NQBH/advanced_STEM_beyond/blob/main/teach/student/NQBH_student.tex).

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## 1 UMT Summer Semester 2025/1480: Introduction to Mathematical Analysis

### 1. TRẦN THANH CƯỜNG.

- Absence: -2.
- Early attendance:  $0.5 + 0.5$ .
- Bonus:

### 2. HUỖNH LÂM VŨ ĐÌNH.

- Early attendance:  $0.5 + 0.5 + 0.5$ .
- Bonus:

### 3. TRƯƠNG CÔNG HOAN.

- Early attendance:  $0.5 + 0.5 + 0.5$ .
- Bonus:

### 4. NGUYỄN HUY HOÀNG [NHH].

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- Early attendance:  $0.5 + 0.5 + 0.5$ .
  - Bonus:  $0.25 + 0.5 + 0.5 + 1 + 2$  (count rooms)  $+ 2$  (build roads)  $+ 2$  (labyrinth).
5. LỮ MINH HOÀNG.
- Absence: -2.
  - Early attendance: 0.5.
  - Bonus:
6. HÀ QUANG HUY.
- Early attendance:  $0.5 + 0.5$ .
  - Bonus:
7. NGUYỄN BẢO KHÁNH.
- Early attendance:  $0.5 + 0.5 + 0.5$ .
  - Bonus:  $1 + 2 + 1 + 0.5$ .
8. NGUYỄN LÊ DĂNG KHOA [NLDK].
- Early attendance:  $0.5 + 0.5 + 0.5$ .
  - Bonus:  $0.5 + 0.5 + 0.5 + 0.5 + 0.5 + 0.5$  (gift)  $+ 1.5 + 0.25 + 0.5$  (doubles)  $+ 0.5$  (prime)  $+ 0.5$  (houseboat)  $+ 1$  (red black)  $+ 1$  (count rooms)  $+ 1$  (dice)  $+ 1$  (min coin)  $+ 1$  (coin combination I)  $+ 1$  (coin combination II)  $+ 1$  (grid path I)  $+ 1.5$  (book shop)  $+ 1$  (exp I).
9. PHAN GIA LẠC [PGL].
- Early attendance:  $0.5 + 0.5 + 0.5$ .
  - Bonus:  $0.5 + 0.25 + 0.25 + 0.5$  (doubles)  $+ 0.5$  (houseboat)  $+ 0.5$  (prime)  $+ 1$  (count room)  $+ 1$  (min coin).
10. PHAN PHƯƠNG PHI [PPP].
- Early attendance:  $0.5 + 0.5 + 0.5$ .
  - Bonus:  $1 + 0.5 + 1 + 0.5 + 0.5$  (prime)  $+ 1$  (count rooms)  $+ 1$  (dice)  $+ 1$  (coin)  $+ 1$  (coin combination I).
11. ĐẶNG MINH PHƯƠNG.
- Early attendance:  $0.5 + 0.5$ .
  - Absence: -2.
  - Bonus:
12. NGUYỄN HOÀNG QUÂN.
- Early attendance:  $0.5 + 0.5 + 0.5$ .
  - Bonus:
13. ĐƯỜNG NGUYỄN MINH SƠN.
- Early attendance:  $0.5 + 0.5 + 0.5$ .
  - Bonus:
14. HẦU TRUNG THÀNH.
- Absence: -2 - 2.
  - Early attendance: 0.5.
15. TẠ MINH THIÊN.
- Early attendance:  $0.5 + 0.5 + 0.5$ .
  - Bonus:
16. LÊ NGUYỄN QUỐC TOÀN.
- Early attendance:  $0.5 + 0.5 + 0.5$ .
  - Bonus:
17. NGUYỄN HOÀNG NGỌC TRẦN.

- Absence: -2 - 2 - 2.
- Bonus:

18. NGUYỄN ANH TUYẾN.

- Early attendance:  $0.5 + 0.5 + 0.5$ .
- Bonus:

19. NGUYỄN NHƯ Ý.

- Early attendance:  $0.5 + 0.5 + 0.5$ .
- Bonus: 1.

### 1.1 Potential topics for midterm exam

1. Cho dãy số  $\{u_n\}_{n=1}^{\infty}$ . Cho vài giá trị cụ thể của  $\varepsilon$ , tính  $N_\varepsilon$ .

## 2 UMT Summer Semester 2025/1481: Introduction to Mathematical Analysis

1. LÊ MINH TRÂM ANH.

- Early attendance:  $0.75 + 0.75 + 0.75$ .
- Bonus:

2. NGUYỄN BẢO ANH.

- Early attendance:  $0.75 + 0.75$ .
- Late: 5 mins.

3. CAO GIA BẢO.

- Absence: -2.
- Early attendance:  $0.75 + 0.75 + 0.75$ .

4. VŨ VĂN ĐẠT.

- Absence: -2.
- Early attendance:  $0.75 + 0.75 + 0.75$ .
- Bonus:  $1 + 0.5$ .

5. TRẦN VĂN HẬU.

- Absence: -2.
- Early attendance:  $0.75 + 0.75 + 0.75$ .
- Bonus: 1.

6. NGUYỄN NGỌC BÍCH HIỀN.

- Early attendance:  $0.75 + 0.75 + 0.75 + 0.75$ .
- Bonus:  $0.25 + 1 + 1 + 2 + 1$ .

7. NGUYỄN VĂN HIẾU.

- Early attendance:  $0.75 + 0.75 + 0.75$ .

8. DƯƠNG XUÂN HƯNG [DXH].

- Early attendance:  $0.75 + 0.75 + 0.75$ .
- Bonus:  $1 + 1 + 1$  (gift) +  $1$  (picture) +  $2$  (count rooms) +  $2.5$  (coin combination I) +  $2$  (coin combination II) +  $3$  (array description).

9. TRẦN LÊ GIA HUY.

- Early attendance:  $0.75 + 0.75 + 0.75$ .

10. TRẦN QUANG HUY.

- Absence: -2.

- Early attendance:  $0.75 + 0.75$ .
11. ĐẶNG PHÚC AN KHANG [DPAK].
- Early attendance:  $0.75 + 0.75$ .
  - Late:  $15 + 52$  mins.
  - Bonus:  $0.5 + 0.5 + 0.5 + 0.5 + 0.5 + 0.5 + 0.5 + 0.5 + 1 + 0.5$  (virus) +  $0.5$  (gift) +  $0.5$  (game) +  $0.25$  (financial management) +  $0.5 + 0.5$  (prime) +  $1$  (red black) +  $1 + 1$  ( $x^a$ ) +  $1$  (count room) +  $1$  (build road) +  $1$  (dice combination) +  $1$  (minimizing coin) +  $1$  (coin combination I) +  $1$  (coin combination II) +  $1.5$  (remove digit) +  $1$  (grid path I) +  $1$  (book shop) +  $1$  (exp I).
12. LƯƠNG QUỐC KHÁNH.
- Early attendance:  $0.75 + 0.75 + 0.75$ .
  - Bonus:  $1 + 1 + 1 + 1$ .
13. NGUYỄN HÀ ĐĂNG KHOA.
- Early attendance:  $0.75 + 0.75 + 0.75$ .
  - Bonus:  $1$ .
14. NGUYỄN HUY ĐĂNG KHOA.
- Absence:  $-1$ .
  - Early attendance:  $0.75$ .
15. HUỖNH ĐỖ ĐĂNG KHOA.
- Late:  $23 + 25$  mins. \*\*\*
  - Early attendance:  $0.75$ .
16. TRẦN TRUNG KIÊN.
- Early attendance:  $0.75 + 0.75 + 0.75$ .
17. NGUYỄN HUỖNH CHÍ LÂM.
- Early attendance:  $0.75 + 0.75 + 0.75$ .
  - Bonus:  $1 + 0.75 + 1 + 1$ .
18. LÊ HOÀNG LINH.
- Early attendance:  $0.75 + 0.75 + 0.75$ .
  - Bonus:  $1 + 1$ .
19. LÂM BẢO NGỌC.
- Absence:  $-1$ .
  - Early attendance:  $0.75 + 0.75 + 0.75$ .
  - Bonus:  $0.25$ .
20. NGUYỄN LƯƠNG NGHĨA.
- Early attendance:  $0.75 + 0.75 + 0.75 + 0.75$ .
  - Bonus:  $0.5 + 1 + 1 + 3 + 1.5 + 1.5$ .
21. TRẦN PHÚC NGUYỄN.
- Early attendance:  $0.75 + 0.75 + 0.75 + 0.75$ .
22. BÙI VĂN NHỎ.
- Early attendance:  $0.75 + 0.75 + 0.75$ .
  - Late:  $40$  mins.
  - Bonus:  $1 + 1 + 1 + 1 + 3 + 0.75$ .
23. LÊ THANH TÂN.
- Absence:  $-1$ .

- Early attendance: 0.75.
  - Late: 5 mins.
24. HUỖNH THỊ KIỀU THU.
- Early attendance:  $0.75 + 0.75 + 0.75 + 0.75$ .
  - Bonus:  $1 + 1 + 1$ .
25. HOÀNG NGHĨA TÍN.
- Early attendance:  $0.75 + 0.75 + 0.75$ .
26. HOÀNG ANH TUẤN.
- Absence: -2.
  - Early attendance:  $0.75 + 0.75 + 0.75$ .
27. NGÔ THANH TÙNG.
- Absence: -2 - 2.
  - Late: 29 mins.
28. NGÔ HOÀNG TÙNG [NHT].
- Early attendance:  $0.75 + 0.75 + 0.75$ .
  - Bonus:  $0.5 + 0.5 + 0.5 + 0.5 + 0.5 + 1.5 + 0.5 + 0.5$  (virus) + 0.5 (vni) + 0.5 (gift) + 0.5 (game) + 1 + 1 (count rooms) + 1 (labyrinth) + 1 (build roads) + 1 (dice) + 1 (min coin) + 1 (coin combination I) + 1 (coin combination II) + 1 (remove digit) + 1 (grid path) + 1.5 (array description) + 1 (book shop) + 1.5 (count towers) + 1.5 (edit distance) + 1 (exponentiation I).
29. TRẦN MỘNG TUYỀN.
- Early attendance:  $0.75 + 0.75 + 0.75$ .
30. NGUYỄN QUANG VỸ.
- Absence: -1.
  - Early attendance:  $0.75 + 0.75$ .
  - Bonus:  $1.5 + 4 + 1 + 1.5$ .

### 3 UMT Summer Semester 2025/1387: Combinatorics & Graph Theory

1. VÕ NGỌC TRÂM ANH [VNTA].
- Early attendance:  $0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5$ .
  - Bonus:  $0.75 + 1 + 2 + 1.5 + 0.5 + 0.5 + 0.5$  (Fibonacci + Lucas) + 0.5 (virus) + 2.5 (gen func) + 2 (Euler candy gen func) + 0.5 (houseboat) + 0.5 (prime) + 1 (red black) + 1 (count rooms) + 1 (labyrinth) + 1 (build roads) + 1 (message routes) + 1 (build team) + 1 (round trip) + 1 (monster) + 1.5 (flight route) + 1 (dice) + 1 (coin) + 1 (coin combination I) + 1 (coin combination II) + 1 (grid path) + 2 (Dijkstra) + 3 (proof Dijkstra) + 2.5 (Dijkstra priority queue) + 1 (exp I) + 1 (Stirling 2 DP) + 0.5 + 0.75.
2. HOÀNG ANH [HA].
- Early attendance:  $0.25 + 0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5$ .
  - Bonus:  $1.5 + 1 + 0.5 + 1.5 + 1$  (Stirling 2).
3. VÕ HUỖNH THÁI BẢO.
- Early attendance:  $0.25 + 0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5$ .
  - Late: 7 mins.
  - Bonus:
4. TRẦN MẠNH ĐỨC.
- Early attendance:  $0.25 + 0.5 + 0.25 + 0.25 + 0.25 + 0.5$ .
  - Bonus:  $1.5 + 1 + 1.5 + 0.5$  (Stirling 2).
  - Late: 18 + 7 mins.

5. NGUYỄN TRUNG HẬU.

- Absence: -2 - 2 - 2 - 2.
- Early attendance:  $0.25 + 0.25$ .
- Bonus:
- Late: 24 mins.

6. PHẠM PHƯỚC MINH HIẾU.

- Early attendance:  $0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5$ .
- Bonus:  $1 + 0.5 + 1$  (Stirling 2) +  $1$  (Stirling 2 Python).

Chấm report Hiếu week 1: B2 Catalan mã O+1 bạn hiếu sai đề: đề kêu chứng minh số cách đặt  $n$  dấu ( & ) đúng là số Catalan  $C_n$ , hông phải tính số Catalan số 4 nên +0. bài  $m$  số 0 &  $n - m$  số 1, làm cách khác tui +1. Prob. 4 CM  $|2[n]| = 2^n$ : +1. Prob. 5: dùng nguyên lý bao hàm-loại trừ chưa chặt chẽ, bài đó cần lý luận nhiều & khó hơn: +0.25. Prob. 6: +1. Prob. 1: +1. Prob. 2: +1.

Ex1.cpp: +0.5, Ex3: +0.5, Ex5.cpp: +1, Ex6.cpp: +1. Ex7.cpp: +1, Ex8.cpp & Ex9.cpp: +0 (bài toán khó hơn thế vì có thể có nhiều bộ điểm thẳng hàng nên việc mô tả cấu trúc hình học là phần khó chính)

7. HOÀNG QUANG HUY.

- Early attendance:  $0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5 + 0.25$ .
- Bonus:  $2 + 1.5$ .

8. PHAN NGUYỄN DUY KHA.

- Absence: -1.
- Early attendance:  $0.25 + 0.5 + 0.25 + 0.25 + 0.25$ .
- Bonus:  $1.5 + 1 + 1 + 1 + 1.5 + 1.5$ .
- Late:

9. ĐẶNG PHÚC AN KHANG.

- Bonus:  $0.5 + 1 + 1$ .

10. PHẠM MINH KHOA.

- Absence: -2 - 2.
- Early attendance:  $0.25 + 0.5 + 0.25 + 0.5 + 0.25$ .
- Bonus:
- Late:

11. TRẦN THÀNH LỢI.

- Absence: -2 - 2 - 2.
- Early attendance:  $0.25 + 0.25$ .
- Bonus:
- Late: 23 + 60 mins.

12. LÊ ĐỨC LONG.

- Absence: -2.
- Early attendance:  $0.25 + 0.25 + 0.5 + 0.25 + 0.5 + 0.25$ .
- Bonus:  $1 + 0.5 + 1 + 1$ .

13. LÊ CÔNG HOÀNG PHÚC.

- Early attendance:  $0.25 + 0.5 + 0.25 + 0.25 + 0.25 + 0.5$ .
- Bonus: 1.
- Late: 24 + 3 mins.

14. HUỖNH NHẬT QUANG.

- Absence: -2 - 2.
- Early attendance: 0.25.

- Late:  $10 + 20 + 20$  mins.
- Bonus:

15. CAO SỸ SIÊU.

- Early attendance:  $0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5$ .
- Bonus:  $1 + 1$ .

16. SƠN TÂN [ST].

- Early attendance:  $0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5 + 0.25 + 0.5$ .
- Bonus:  $1 + 1 + 1.5$ .

Chấm report Sơn Tân:  $0.25$  (a) +  $0.25$  (b) +  $0.25$  (c) +  $0.25$  (e) +  $0.25$  (g, ghi sai mũ) +  $0.25$  (h) +  $1.5$  (Pascal, làm được cho  $(\sum_{i=1}^m a_i)^n$  nhiều điểm hơn) +  $2$  (tính  $C_n^k$ ).

17. NGUYỄN NGỌC THẠCH [NNT].

- Early attendance:  $0.25 + 0.25 + 0.5 + 0.25 + 0.5$ .
- Bonus:  $3 + 1 + 1 + 1.5 + 2$  (Catalan) +  $5$  (Euler candy) +  $2.5$  (induction) +  $1$  (toss coin) +  $1$  (dice roll) +  $1$  (dice roll) +  $1 + 1 + 2$  (combinator identity) +  $1.5$  (dollar) +  $0.5 + 2.5 + 1.5 + 1 + 1 + 1 + 1 + 1.5 + 1 + 1.5$  (Stirling 2 recursive).
- Late:  $5 + 23$  mins.

18. PHAN VINH TIẾN [PVT].

- Late:  $8 + 25 + 16$  mins.
- Early attendance:  $0.25 + 0.5 + 0.25 + 0.5$ .
- Bonus:  $2 + 0.5$  (virus) +  $1 + 2$  (binomial) +  $1$  (exp I) +  $1$  (Stirling 2 DP) +  $1$  (Bell).

### 3.1 Potential topics for midterm- & final exams

- Chứng minh bằng phương pháp quy nạp toán học.
- Bài toán chia kẹo Euler.
- Khai triển nhị thức Newton.
- Sử dụng định lý Euler & thuật toán Havel-Hakimi để chạy tay kiểm tra 1 dãy có phải là graphical sequence hay không. Vẽ đồ thị minh họa.
- Hàm sinh.
- Chạy tay thuật toán Dijkstra.
- Shortest path problem on graph – Bài toán đường đi ngắn nhất.

## 4 UMT Summer Semester 2025/1488: Introduction to AI

1. HỒ LÊ DUY.

- Absence: -2.
- Early attendance:  $0.5 + 0.5 + 0.5$ .

2. TRƯƠNG CÔNG HOÀN.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .

3. LỮ MINH HOÀNG.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .

4. ĐINH KIM HƯNG.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
- Bonus: 3.

5. HUỖNH VÕ QUỐC KHÁNH.

- Absence: -2 - 2.

- Early attendance:  $0.5 + 0.5$ .
6. NGUYỄN NHẬT KHÔI.
- Absence: -2.
  - Early attendance:  $0.5 + 0.5$ .
7. VÒNG LÝ NĂM PHÚC VLNP.
- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
  - Bonus:  $1.5 + 2$  (extended scheduling).
8. HẦU TRUNG THÀNH.
- Absence: -2 - 2.
  - Early attendance: 0.5.
  - Late: 5 mins.
9. NGUYỄN THI.
- Absence: -2 - 2 - 2 - 2.
10. DẶNG NGUYỄN DUY TRƯỜNG.
- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .

## 5 UMT Summer Semester 2025/1493: Information Technology Fundamentals 2

1. CAO NGUYỄN GIA AN.
- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
  - Bonus:  $3.5 + 2 + 2 + 2.5 + 2.5 + 1 + 1.5 + 1 + 1 + 1.5 + 2.5 + 1$  (eval func) +  $1.5 + 2 + 2 + 2.5$ .
2. HOÀNG TRÂM ANH.
- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
  - Bonus:  $1 + 2 + 2 + 2.5 + 1.5 + 0.5 + 1 + 1.5$ .
3. BÙI NGUYỄN MINH DŨNG.
- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
  - Bonus:  $2.5 + 2 + 2 + 2.5 + 2.5 + 1 + 1.5$ .
4. NGUYỄN NGỌC HÂN.
- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
  - Bonus:  $0.5 + 1 + 1.5 + 0.5 + 1 + 1 + 1.5 + 1 + 1.5 + 2 + 2 + 2.5$ .
5. NGUYỄN THÀNH THÁI HIỆP.
- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
  - Bonus:  $3 + 2 + 2 + 2.5 + 2.5 + 1 + 1.5 + 0.5 + 1 + 1.5 + 1 + 1.5 + 2.5$  (near perfect) +  $2 + 2$ .
6. VŨ NGUYỄN YẾN HOA.
- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
  - Bonus:  $1 + 2 + 2.5 + 1 + 1.5 + 0.5 + 1$  (eval func) +  $1.5 + 2$ .
7. ĐỖ HUY HOÀNG.
- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
8. NGUYỄN GIA HUY.
- Absence: -2 - 2 - 2.
  - Early attendance:  $0.5 + 1$  (eval func) +  $1.5 + 2 + 2 + 2.5$ .
9. PHẠM LÂM GIA KHÁNH.



- Absence: -2.
- Late: 15 mins.
- Bonus:  $0.5 + 0.5 + 1 + 1.5 + 2$ .

10. PHẠM XUÂN KHÁNH.

- Absence: -2.
- Early attendance: 0.5
- Late:  $15 + 30$  mins.
- Bonus:  $2 + 1 + 1.5 + 0.5 + 1 + 1.5 + 1 + 2$ .

11. BÙI ĐỨC KHOA.

- Absence: -2.
- Early attendance:  $0.5 + 0.5 + 0.5$ .
- Bonus:  $0.5 + 2 + 1$  (eval func) + 1.5.

12. TRẦN VŨ NGUYỄN KHÔI.

- Early attendance:  $0.5 + 0.5 + 0.5$ .
- Late: 20 mins.
- Bonus:  $3 + 2 + 2 + 1 + 1.5 + 1 + 1.5 + 1 + 1.5 + 2 + 2$  (near perfect) + 2 + 2.5.

13. VŨ THỊ NGỌC LAN.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
- Bonus:  $2.5 + 2 + 2 + 2.5 + 1 + 1.5 + 0.5 + 1 + 1.5 + 1 + 1.5 + 2 + 2 + 2.5$ .

14. TRẦN VĂN LÊN.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
- Bonus:  $0.5 + 2 + 2 + 2.5 + 2.5 + 1 + 1.5 + 1 + 1 + 1.5 + 1$  (eval func) + 1.5 + 2 + 2 + 2.5.

15. THÁI ANH NHẬT THIÊN LONG.

- Absence: -2 - 2 - 2.
- Early attendance: 0.5.
- Bonus:  $2 + 2 + 2.5$ .

16. LÊ NGUYỄN BẢO NGỌC.

- Absence: -2 - 1.
- Late:  $15 + 15$  mins.
- Bonus:  $1 + 1.5 + 0.5 + 1 + 1.5 + 1 + 1.5 + 2$ .

17. LÊ HỒNG NGỌC.

- Absence: -2 - 1.
- Early attendance:  $0.5 + 0.5$ .
- Bonus:  $2 + 2.5 + 1$  (eval func) + 1.5 + 2 + 2.

18. NGUYỄN HỮU NHÂN.

- Absence: -2 - 2.
- Early attendance: 0.5.
- Bonus: 0.5.
- Late: 15 mins.

19. LÂM THIÊN NHÂN.

- Absence: -2.
- Early attendance:  $0.5 + 0.5 + 0.5$ .
- Bonus:  $2.5 + 1$ .

20. PHẠM MINH NHẬT.

- Absence: -2
- Early attendance:  $0.5 + 0.5 + 0.5$ .
- Bonus:  $1.5 + 2 + 2 + 2.5 + 1 + 1.5 + 2$ .

21. PHẠM QUỲNH NHƯ.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
- Bonus: 1 (eval func)

22. NGUYỄN NGỌC QUỲNH NHƯ.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .

23. ĐOÀN TRƯỞNG THIÊN PHONG.

- Absence: -2.
- Early attendance:  $0.5 + 0.5$ .

24. HỒ TẤN TÀI.

- Early attendance:  $0.5 + 0.5 + 0.5$ .
- Bonus:  $1.5 + 2 + 2 + 1 + 0.5 + 1 + 1 + 1.5 + 2$ .
- Late: 10 mins.

25. HỒ QUỐC THÀNH.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
- Bonus:  $1 + 1.5 + 1 + 1 + 1.5$ .

26. NGUYỄN THỊ MINH THƯ.

- Absence: -2 - 2 - 2 - 2.

27. ĐỖ THỊ HẢI TÌNH.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
- Bonus:  $2 + 2 + 2.5 + 1 + 1.5 + 0.5 + 1 + 1.5 + 1 + 1.5 + 2$ .

28. VÕ ĐOÀN THÁI TOÀN.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
- Bonus:  $0.5 + 2 + 2 + 1 + 0.5 + 1 + 1 + 1.5 + 2 + 2.5$ .

29. TRẦN QUỐC TRUNG.

- Early attendance:  $0.5 + 0.5 + 0.5 + 0.5$ .
- Bonus:  $0.5 + 2 + 2 + 2.5 + 1 + 0.5 + 1.5 + 1 + 1.5 + 2$ .

## 6 Olympic Tin OLP ICPC

1. ĐỖ ANH KIỆT [DAK].

- Bonus: 0.5 (virus) + 1 (count rooms) + 1 (dice) + 1.5 (shortest route I).

2. TRẦN QUANG SƠN [TQS]. K3.

- Bonus:  $0.5 + 1$  (prime) + 1 (houseboat).

3. PHẠM ĐĂNG HOÀNG THIÊN [PDHT]. K3.

- Bonus:  $0.5 + 1$  (houseboat) + 2 (remove digit).

## 7 Miscellaneous