The class is taught in English only!

Overview of the USNCO Mentorship Program offered in 2024-25 - Level 2/3/4

Modules			**Module** 1	**Module** 2	**Module** 3
Timeline			late Aug-mid Oct	late Oct-mid Dec	early Jan-late Feb
Topics	**Level** 2 [AP Plus and Local]: 8:30-10:00 PM ET on **Saturday**	for students with a 5 **in the AP Exam** or **motivated** students **taking AP Chemistry concurrently**	Stoichiometry, Atomic Structures, Periodicity, Molecular Structures, Bonding, IMFs, Gases	Thermochemistry, Kinetics, Chemical Equilibrium, Acids&Bases, Buffer&Titrations	Descriptive, Laboratory, Fundamental Organic Chemistry, Electrochemistry, Thermodynamics
	Level 3 [Post-AP and National]: 8:30-10:00 PM ET on **Sunday**	for students who scored 40 **or higher in USNCO Local** 2024	Advanced Stoichiometry, Advanced Periodicity, Advanced Bonding, Solid Structures, Solutions, Reactions	**Integrated** Chemical Principles [Kinetics, Thermodynamics, Equilibrium, Electrochemistry]	**Advanced** Organic Chemistry based on structures and reactivities
	Level 4 [Study Camp and IChO]: 8:30-10:00 PM ET on **Friday**	for students who won **Honors Awards or higher in USNCO National** 2024	Advanced Reactions, Coordination Chemistry, Analytical Chemistry	**IChO-level** Chemical Principles with an emphasis of problem solving	**IChO-level** Integrated Organic Chemistry with an emphasis of problem solving

Correlation of Level 3 with the USNCO National Exam Syllabus[1]

Questions	**Topic**	**Module**
1-6	Stoichiometry/Solutions	**Module 1 (Fall2024)**
7-12	Descriptive Chemistry/Laboratory	**Module 1 (Fall2024)**
13-18	States of Matter	**Module 1 (Fall2024)**
19-24	Thermodynamics	*Module 2 (Winter2024)*
25-30	Kinetics	*Module 2 (Winter2024)*
31-36	Equilibrium	*Module 2 (Winter2024)*

[1] https://www.acs.org/content/acs/en/education/students/highschool/olympiad/prepare-for-exams/exam-information.html

37-42	Redox/Electrochemistry	*Module 2 (Winter2024)*
43-48	Atomic Structure/Periodicity	**Module 1 (Fall2024)**
49-54	Bonding/Molecular Structure	**Module 1 (Fall2024)**
55-60	Organic/Biochemistry	*Module 3 (Spring2025)*

Level 3 Module 3 Overview

- ### Targeted students

Students should have a solid background in **Pre-Calculus** (A or A+) and **at least two years of solid chemistry experience** (A or A+ in AP Chemistry with a 5 in the AP exam, IB Chemistry HL, or equivalent).

The Level 3 class [Post-AP & USNCO National] covers all topics required for the USNCO National Part I/II/III exams, which are **significantly more challenging than the Local Exams**. The course emphasizes problem-solving, integrated chemical principles, reaction writing, advanced organic chemistry, and more.

It is recommended for students who did well on the **USNCO Local Exam 2024** (40 or higher) to prepare for the USNCO **National Exam in April 2025**.

Students are expected to:

- Read textbooks prior to the class.
- Be engaged in class discussions and take notes.
- Complete the weekly problem set on time for practice and self-evaluation.

- ### Time & Scope

Module 3 is planned to start from early Jan 2025 with **8 live sessions** (1.5 hours per session, one session per week, 8:30-10:00 PM ET (***tentative***) on **Sunday**).
It will cover advanced topics in Application of Thermodynamics, Descriptive Chemistry/Laboratory, Advanced Organic Chemistry, etc.

- **Payment**

$599 for all 8 live sessions, lecture notes, and problem sets.

Sign it up and pay the tuition by **Jan 6, 2025**.

Signup link for **L3M3** - https://forms.gle/5xJYJCPJFVqcekZ76

Payment Info

Payment options include Zelle QuickPay and Alternative payment.

Zelle QuickPay

Please send **$599** to CHENQ2020@gmail.com if you would like to pay through Zelle QuickPay. In the payment memo, please also state the full name of the student and write L3M3 next to it.

E.g. Alex Han L3M3

Alternative payment

If you don't have Zelle Quickpay, you may contact chen@dcho.us for an alternative payment method, which has an additional 3% service fee.

Once we receive your payment, we will contact you as soon as possible and provide you all the relevant class information.

- **Syllabus & Schedule (*subject to change*)**

Sessions	Contents	Homework	Date of Class
Session 1	Application of Thermodynamics 1	PS1	Jan 5 (Sun)
Session 2	Application of Thermodynamics 2	PS2	Jan 12 (Sun)
Session 3	Descriptive Chemistry / Laboratory 1	PS3	Jan 19 (Sun)
Session 4	Descriptive Chemistry / Laboratory 2	PS4	Jan 26 (Sun)
Session 5	Advanced Organic Chemistry 1	PS5	Feb 2 (Sun)
Session 6	Advanced Organic Chemistry 2	PS6	Feb 9 (Sun)
Session 7	Advanced Organic Chemistry 3	PS7	Feb 16 (Sun)

Session 8	Advanced Organic Chemistry 4		Feb 23 (Sun)

Resources

- **Textbooks**

[Module 1&2] Chemical Principles, 6e or 7e or 8e; by Peter Atkins, Loretta Jones, Leroy Laverman.

[Module 3] Organic Chemistry, 2e or 3e or 4e; by David Klein.

- **Online Platform**

Instructor: Zoom (link will be shared with students in Google Classroom) + iPad (GoodNotes for annotations) + Apple Pencil

Students: A PC or laptop with a webcam and microphone is needed. Devices with a touchscreen are recommended but not required.

- **Resource Platform**

Google Classroom, all of the class materials including resources, assignments, lecture notes, problem sets and solutions, etc. are organized and shared in google classroom.

- **Contact Information**

Dr. Chen (chen@dcho.us)

Dr. Chen's website: https://dcho.us