NJIT New Jersey Institute of Technology

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE

Chemistry 244-H02 Honors Organic Chemistry II
Spring 2025 Course Syllabus

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: NJIT Academic Integrity Code.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

This course expects students to work without artificial intelligence (AI) assistance in order to better develop their skills in this content area. As such, AI usage is not permitted throughout this course under any circumstance.

In the event of a shift to remote and converged teaching due to the COVID-19 pandemic was required, both instructors and students must make changes to their normal working protocols for courses. Students are asked to practice extra care and attention in regard to academic honesty, with the understanding that all cases of plagiarism, cheating, multiple submission, and unauthorized collaboration are subject to penalty. Students must properly cite and attribute all sources used for papers and assignments. Students may not collaborate on exams or assignments, directly or through virtual consultation, unless the instructor gives specific permission to do so. Posting an exam, assignment, or answers to them on an online forum (before, during, or after the due date), in addition to consulting posted materials, constitutes a violation of the university's Honesty policy. Likewise, unauthorized use of live assistance websites, including seeking "expert" help for specific questions during an exam, can be construed as a violation of the honesty policy.

COURSE INFORMATION

Course Description: Chem 244H: Honors Organic Chemistry II. The second semester in the two-semester Organic Chemistry sequence. Systematic study of the theories, principles, applications and techniques of Organic Chemistry. The course will cover topics such as alcohols, conjugated and aromatic compounds, carbonyl derivatives and amines.

Number of Credits: 3

Prerequisites: Chemistry 243 minimum grade C in both courses.

Course-Section and Instructors

Course-Section	Instructor
Chem 244 – H02	Dr. Christopher DeSantis
W/F 8:30AM – 9:50AM	Room: FMH 407

Office Hours: Tiernan B006 (basement) Tuesday 2-4PM and Friday 10-11AM
Office hours are also available by appointment.

EMAIL: cdesanti@njit.edu or christopher.a.desantis@njit.edu

Webpage: The course website is available through Canvas, which can be accessed via the njit.edu. Please email me immediately if you cannot access the class site. All materials including lecture summaries, quizzes, any PowerPoint slides, and other documents will be posted on the class site. Please check the site frequently for new materials and announcements. All grades for this course will be posted to Canvas on a regular basis. You are responsible for all

updates posted to Canvas, and if you find any mistakes in content or grading, or you need help accessing these materials, please contact your instructor as soon as possible.

Required Textbook:

Title	Organic Chemistry
Author	John McMurry
Edition	10th
Publisher	OpenStax
ISBN #	ISBN-13: 978-1-951693-98-5

- Free Resources: Organic Chemistry 10th edition (2023) by John McMurry on Openstax. Free textbook and solution manuals can be found using this url: https://openstax.org/details/books/organic-chemistry?Student%20resources

- Aktiv Chem: A $30 subscription can be accessed from a mobile device or computer, will be used for graded homework.
  You need to pair the app with the course in order to sync your grades. The code to access the course and the guidelines to pair it are found on the Canvas page.
- Molecular model kit: This is a highly suggested purchase. Molecular models will be allowed during exams.

University-wide Withdrawal Date: The last day to withdraw with a **W** is Monday April, 7th. It will be strictly enforced.

OUTCOMES

Upon completion of Organic Chemistry II, the students should have further understanding in the following areas:

1. Describe properties, synthesis and reactivity of alcohols
2. Explain various organic reagents like Grignard reagents and borohydrides and their uses in specific reactions
3. Use the curved-arrow formalism to describe the mechanisms of reactions.
4. Identify various functional groups in organic molecules, particularly alkynes, alcohols, acids, ethers, esters, aldehydes, ketones and amines
5. Describe key reactions of alkynes (addition)
6. Know the nomenclature of ethers, conjugated and aromatic systems, ketones, aldehydes and derivatives thereof, amines, carboxylic acids and derivatives
7. Construct molecular orbital pictures for conjugated and aromatic systems and explain the reactivity patterns of conjugated and aromatic systems.
8. Use Hückel's rule to determine if compounds are aromatic or anti-aromatic.
9. Predict the products of reactions involving or forming ethers, conjugated systems, aromatic compounds, ketones and aldehydes, amines, and carboxylic acids and derivatives.
10. Devise syntheses of complex molecules from simpler reactants by using retrosynthetic analysis.
11. Propose plausible mechanisms for complex multi-step reactions involving cationic or anionic intermediates.
12. Explain the relative acidity and basicity of organic molecules and rank functional groups in order of their acidity/basicity.
13. Understand how the concept of resonance explains reactivity, acidity, basicity, stability, structure, and hybridization of organic molecules.

POLICIES

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All CES students must familiarize themselves with, and adhere to, all official university-wide student policies. CES takes these policies very seriously and enforces them strictly. In addition, obtaining course materials such as past exams or solutions to homework and/or class assignments from external sources constitutes cheating. The official Student's Solutions Guide is exempt. Posting of course materials on external websites without the approval of the instructor violates intellectual property laws and hence is strictly forbidden**.** Any student cheating on an assignment will be assessed a

penalty of 20 points, in addition to a grade of zero for the given assignment.

Grading Policy: The final grade in this course will be determined as follows:

In Class Worksheets (12x)	120
Participation – CIQ (14x) + In Class Polling (14x)	28
Homework (11x + Spectroscopy Review)	60
Pre-Chapter Assignment (11x)	33
Quizzes (3x)	75
Synthesis Challenge	50
Exam I	125
Exam II	125
Exam III	125
Final (cumulative)	250
Total Points	991

Your final letter grade in this course will be based on the following tentative curve:

A	891 >	**C**	693 >
B+	842 >	**D**	594 >
B	792 >	**F**	594 <
C+	743 >		

You must maintain an average of 35%, which is 245 points, in the exam and quizzes to be considered for a grade of D or higher. You will receive an F even if you have an adequate point total without this requirement.

Participation: Attendance at classes is **highly recommended**. Each class is a learning experience that cannot be replicated through simply "getting the notes." This is also a highly compacted course and even one absence may cause a steep drop in course performance. Absences for unavoidable legitimate reasons will be permitted upon presentation of appropriate supporting documentation to the Dean of Students. During lectures, students will be tasked with answering polled questions. Students must answer at least ½ of the questions presented to earn participation credit. Poll participation will be worth 14 points of the total grade. At the end of each week, students will be required to complete a "Critical Information Questionnaire" (CIQ) short answer survey which will be worth 1 pts each in Canvas (14 pts total). The purpose of the CIQ is to provide a way for students to give feedback and alert the professor of any items which may need further clarification or to provide the professor with an understanding of what works best for students to maximize learning. **"Critical Information Questionnaire" survey must be completed by 11:59PM on the day after lecture.** CIQs with incomplete or low-quality answers will not receive credit. **You must complete the syllabus quiz to earn participation points.**

In Class Expectations: The classroom is meant to be an inclusive and respectful environment where all students can feel comfortable expressing their ideas. Therefore, please treat the classroom as a professional environment. It is the job of everyone in the classroom to be respectful, use appropriate language, and behave appropriately. Discrimination or mistreatment of any kind for any reason will not be tolerated and will be reported to the Dean of Students. Students are expected to participate in class, answer questions, ask questions, and work on in class problems.

COVID-19 CONSIDERATIONS: This will only take place if mandated by the university. Because of the current conditions, all instructors and students may be required to follow university guidelines in instructional spaces (classrooms, labs, studios). Students failing to observe any mandate should be first asked by the instructor to either comply or leave the classroom; if students do not obey, instructors should be contacting public safety. Public Safety staff will be escorting students outside the instructional area and reporting them to the Office of The Dean of

Students for disciplinary action. If you feel ill or in some cases, have come into contact with someone who is infected with COVID-19, do not come to class. Please contact your professor and the Office of the Dean of Students. Your professor will make reasonable accommodations and invite you into lecture via Webex if you are able.

Class Recordings: Class sessions may be recorded by the instructor. These recordings shall only be used as an educational resource and are not to be distributed or used outside of this class. Information on how to access recorded lectures will be made available by your instructor. Any recordings that contain identifiable information about students will not be used beyond this semester.

Class Recording Etiquette*:* Students are expected to respect their fellow students' privacy and freedom to learn without disruption. Students are not allowed to capture or reproduce anyone's name, image, or voice without permission. They must be polite and respectful in online chat. Informal chat is okay, but typing is restricted to things that one would say out loud in front of the entire class. Students must always conduct themselves on their webcam video as they would in person in a classroom.

In Class Worksheets: There will be 12 in class works sheets worth 10 points each. Students will work in pairs to develop solutions to the problems, but each student must hand in a copy of their own work. The purpose of the group work is to teach each other topics in class and to discuss problems presented in the course. It is not intended for students to copy work from other students once a solution is presented. If you formulate a solution before your teammates, become the teacher! This will reinforce your own understanding. The worksheet will be completed in two parts. Students will be given 20-30 minutes to complete the worksheet with their partner. If the worksheet is not completed in class, it must be finished at home. Students must provide a reasonable answer to all questions and failure to do so will result in a 50% reduction in score. The first attempt will be graded on completeness. Students upload this first attempt as a PDF, and it will be worth 5 points. We will then go over the worksheet and students will make corrections the following class. Students will then upload this second attempt as a separate PDF for 5 points. In the second attempt, any missing questions will result in a 1-point penalty per question. Please upload a PDF file only. Missed worksheets due to approved absences may be completed after their due date. Late assignments will not be accepted. Each student will upload their own work in Canvas. **Every student is expected to equally contribute to the group work**. Each student will earn the grade for their own work.

Pre-Chapter Assignments: A short assignment in Canvas worth 3 points will be due before the beginning of each chapter. The purpose of the short assignment is to allow students to become familiar with basic topics to be covered in the lecture. Pre-chapter Assignments will be due at the beginning of lecture and will not be accepted late.

Homework Policy: 11 homework assignments and a spectroscopy review worth 60 points will be presented on Aktiv Chemistry which is linked in the class Canvas page. Aktiv Chemistry will cost $30. 50% of the points will be awarded for attempting to solve the problems and 50% of the points will be awarded for correctness. On time homework completion is critical to success in this course. The homework due dates will be clearly posted in Canvas and discussed in class. Plan timely homework completion accordingly. Late homework will not be accepted without a Dean's note. Homework will be accepted until 11:59PM on the day they are due in Aktiv.

Quizzes: Quizzes are given according to the tentative date shown on the course calendar below. There will be three quizzes given at the beginning of the lecture worth 25 pts each. Their course content coverage will be announced in lecture. Use of notes, notebooks, or textbooks will not be permitted and mobile communication devices (iPhones, mobile phones, PDAs, computers, netbooks, smart glasses smart watches etc.) should remain turned off and stored in your bag for the duration of the exam period. Anyone found in possession of the above will be given a zero on the assessment. Students are permitted to use molecular modeling kits during quizzes, but they cannot share them. Violations of this policy will be submitted to the Office of the Dean of Students for review. **Each student is required to bring a photo ID to a quiz, and this will be used to confirm a student's identity during the quiz period. Quizzes will take place as scheduled and a sterile test taking environment is expected for each student. Quizzes will be timed and take place as shown on the class calendar.**

Exams: There will be 3 midterm exams during class time during the semester and 1 final exam. The following

exam periods and course coverage are tentative and therefore subject to change:

Exam I (Ch. 9, 17, 18)	February 26th
Exam II (Ch. 14, 15, 16)	April 2nd
Exam III (19, 20, 21)	April 30th
Final Exam (cumulative)	TBA by university

The final exam will be cumulative. Use of notes, notebooks, or textbooks will not be permitted and mobile communication devices (iPhones, mobile phones, PDAs, computers, netbooks, smart watches, smart glasses, etc.) should remain turned off and stored in your bag for the duration of the exam period. Students are permitted to use molecular modeling kits during exams. Violations of this policy will be submitted to the Office of the Dean of Students for review and the student will get a zero on the assignment. **Each student is required to bring a photo ID to an exam, and this will be used to confirm a student's identity during the exam period.** Exams will be returned to students as soon as possible. **Exam regrades must be submitted within 1 week of returning the exam with a sheet describing the error. Exams will be administered and proctored live in class. Exams will take place as scheduled and a sterile test taking environment is expected for each student.**

In the event of online class:

In the event of online class mode being adopted, the exams will be administered online using the RESPONDUS browser with Webcam and be live proctored in a Webex meeting. **This browser is available in Canvas. Students must complete a proper environment check before starting the exam in the exam video by showing their calculator, blank scratch paper, their work surface, cell phone is placed away from work area, and a 360-degree view of their workspace to confirm no information is posted around the work area. Students may only use scientific (non-programmable, non-graphing) calculators on exams. The student will also be asked to show a photo-ID.**

During the exam from home (if needed), you have to adopt the following behaviors

1. No cell phones anywhere near the exam-- any indication of cell phone presence (a ring tone, vibration, music) will result in a point penalty**.**
2. No Talking to family members.
3. No Covering of face (either with clothing or hand) except for mask.
4. No Moving out of frame.
5. No Listening to music.
6. Setting up the camera so that the camera's view is not completely on student and workspace.

To protect the test's integrity, anyone found to violate any of the rules (2-6) of an exam will be docked 20 points for each violation from their exam score.

We understand these are difficult times and it is natural to move around when taking an exam in the comfort of your home. We must remind you that this is a high-stakes exam and must be treated as such. Please observe all exam rules as if you were taking the exam in person.

Makeup Exam/Quiz Policy: There will normally be **NO MAKE-UP QUIZZES OR EXAMS** during the semester unless a valid excuse is provided to the Dean of Students. If a student has a legitimate reason for missing a quiz or exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor's note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the CES Department Office/Instructor that the exam will be missed so that appropriate steps can be taken to make up the grade. The make-up exam or quiz must be completed within 1 week of the initial date of the exam.

Grading Error: Assignments are returned through Canvas or in class. If you believe there is an error, you have until one week following return of the assignment to submit a piece of work for regrading. You must write a very brief description of the problem in an email or on the back of the assignment.

Cellular Phones/Smart Watches/Bluetooth devices/Smart Glasses: All cellular phones and other electronic devices must be switched off during all class times unless they are being used to participate in class. Such devices must

be stowed in bags during exams or quizzes. Students are not permitted to keep these items on their person during any exams. If a cell phone, smart device, smart glasses, or ear buds is discovered in your possession during an exam or quiz the exam/quiz will be removed and immediately graded a 0.

Textbook Problems and online practice: It is important to study outside this course in order to achieve the best results. The problems within the textbook and on Aktiv, both in chapter and at the end of the chapter, provide excellent practice for the course material. Work out the problems without the study guide and check your answers after completion to ensure optimal understanding of the material. **Students are not responsible for questions related to sections not covered in the class**

How to be successful in organic chemistry: Organic chemistry is a difficult subject, and it is vital to master new material as it is presented. A successful student will 1) prepare ahead of class by reading the chapter to be discussed, completing the pre-class assignment, and formulating questions to ask in lecture 2) attend and participate in lecture by answering and asking questions and 3) work after lecture on homework and book problems. Homework is a vital part of mastering organic chemistry, and nothing can replace practice. Watching videos will not be enough to be successful. There are numerous resources for practice including online resources, the tutoring center, office hours, library resources, and other organic textbooks/workbooks. Work on problems without the solution manual open and then check answers afterwards. **Feel free to email me or come visit during office hours with any questions you may have!** After an exam/quiz/homework assignment is returned, correct any lapses in knowledge by working on topics that may have been answered incorrectly. Mastering organic chemistry takes time and practice so set aside committed time slots in your schedule to work on organic chemistry. Finally, always ask the "why" question when doing homework rather than simply memorizing answers.

ADDITIONAL RESOURCES

Mental Health and Well-being: NJIT is committed to the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact Center for Counseling and Psychological Services (c-CAPS) at https://www.njit.edu/counseling/ or by calling the c CAPS office at 973-596-3414. If you need support and information about options and resources, please also reach out to the Office of the Dean of Students at https://www.njit.edu/dos/

Accommodation of Disabilities: **O**ffice of **A**ccessibility **R**esources and (**OARS**, *formerly known as Disability Support Services*) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Scott Janz, Associate Director at the Office of Accessibility Resources and Services at 973-596-5417 or via email at scott.p.janz@njit.edu. The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Office of Accessibility Resources Services office authorizing your accommodations will be required.

For further information regarding self-identification, the submission of medical documentation and additional support services provided please visit the Accessibility Resources and Services (OARS) website at: http://www5.njit.edu/studentsuccess/disability-support-services/

Using Respondus LockDown Browser and a Webcam for Online Exams

Respondus LockDown Browser is a locked browser for taking assessments or quizzes in Canvas or Moodle. It prevents you from printing, copying, going to another URL, or accessing other applications during a quiz. If a Canvas or Moodle quiz requires that LockDown Browser be used, you will not be able to take the assessment or quiz with a standard web browser. You may be required to use LockDown Browser with a webcam (Respondus Monitor), which will record you during an online exam.

The webcam can be built into your computer or can be the type that plugs in with a USB cable. Watch this short video to get a basic understanding of LockDown Browser and the webcam feature. A student Quick Start Guide (PDF) is also available.

1. Download and install LockDown Browser from this link:
   http://www.respondus.com/lockdown/download.php?id=264548414
2. Once your download has finished, locate the "LockDown Browser" shortcut on the desktop and double-click it. (For Mac users, launch "LockDown Browser" from the Applications folder.)

3. You will be brought to the Canvas or Moodle login page within the LockDown Browser. If you are in Moodle, click “Login with your UCID” to log in with your NJIT UCID and password and then click Login.
4. Under “My courses,” click on the course in which you have to take the exam that requires the LockDown Browser.
5. After you enter the course, find the exam and click on it.
6. A confirmation prompt will appear. Click the “Start attempt” button. Once a quiz has started with LockDown Browser, you cannot exit until the Submit all and finish button is clicked.
7. If you are required to use a webcam (Respondus Monitor), you will be prompted to complete a Webcam Check and other Startup Sequence steps.

IST Service Desk

Students may contact the IST Service Desk with any questions. Questions or problems can be submitted via web form by going to: **https://servicedesk.njit.edu** and clicking on the "Report your issue online" link.

You may also call the IST Service Desk with any questions at 973-596-2900.

ACADEMIC CALENDAR

January	20	Monday	Martin Luther King, Jr. Day
January	21	Tuesday	First Day of Classes
January	25	Saturday	Saturday Classes Begin
January	27	Monday	Last Day to Add/Drop a Class
January	27	Monday	Last Day for 100% Refund, Full or Partial Withdrawal
January	28	Tuesday	W Grades Posted for Course Withdrawals
February	3	Monday	Last Day for 90% Refund, Full or Partial Withdrawal, No Refund for Partial Withdrawal after this date
February	17	Monday	Last Day for 50% Refund, Full Withdrawal
March	10	Monday	Last Day for 25% Refund, Full Withdrawal
March	16	Sunday	Spring Recess Begins - No Classes Scheduled - University Open
March	22	Saturday	Spring Recess Ends
April	3	Thursday	Wellness Day - No Classes Scheduled - University Open
April	7	Monday	Last Day to Withdraw
April	18	Friday	Good Friday - No Classes Scheduled - University Closed
April	20	Sunday	Easter Sunday - No Classes Scheduled - University Closed
May	6	Tuesday	Thursday Classes Meet

May	7	Wednesday	Friday Classes Meet
May	7	Wednesday	Last Day of Classes
May	8	Thursday	Reading Day 1
May	9	Friday	Reading Day 2
May	10	Saturday	Final Exams Begin
May	16	Friday	Final Exams End
May	18	Sunday	Final Grades Due

January 2025

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
WEEK 1	20	21	22 Lecture 1 Review + Ch. 9 Introductions	23	24 Lecture 2 Ch. 9
WEEK 2	27	28	29 Lecture 3 Ch. 17 Homework 1 due	30	31 Lecture 4 Ch. 17 Worksheet 1

FEBRUARY*2025*

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
WEEK 3	3	4	5 Lecture 5 Ch. 17 Homework 2 due	6	7 Lecture 6 Ch. 17 Worksheet 2
WEEK 4	10	11	12 Lecture 7 Ch. 18 **Quiz 1**	13	14 Lecture 8 Ch. 18

			Homework 3 due		Worksheet 3
WEEK 5	17	18	19 Lecture 9 Ch. 14	20	21 Lecture 10 Ch. 14
			Homework 4 due		Worksheet 4
WEEK 6	24	25	26 **Exam 1**	27	28 Lecture 11 Ch. 14
					Worksheet 5

MARCH*2025*

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
WEEK 7	3	4	5 Lecture 12 Ch. 15	6	7 Lecture 13 Ch. 15
Notes			Homework 5 due		Worksheet 6
WEEK 8	10	11	12 Lecture 14 Ch. 15 **Quiz 2**	13	14 Lecture 15 Ch. 16
			Homework 6 due		Worksheet 7
WEEK 9	17 **SPRING BREAK**	18 **SPRING BREAK**	19 **SPRING BREAK**	20 **SPRING BREAK**	21 **SPRING BREAK**
3 WEEK 10	24	25	26 Lecture 16 Ch. 16	27	28 Lecture 17 Ch. 16

		Homework 7 due		Worksheet 8

APRIL *2025*

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
WEEK 11	March 31	1	2 **Exam 2**	3 **NO CLASS**	4 Lecture 18 Ch. 19
Notes					Worksheet 9
WEEK 12	7	8	9 Lecture 19 Ch. 19	10	11 Lecture 20 Ch. 19
Notes			Homework 8 due		Worksheet 10
WEEK 13	14	15	16 Lecture 21 Ch. 20 **Quiz 3**	17	18 **NO CLASS**
Notes			Homework 9 due		
WEEK 14	21	22	23 Lecture 22 Ch. 20	24	25 Lecture 23 Ch. 21
Notes			Homework 10 due		Worksheet 11
WEEK 15	28	29	30 **Exam 3**	May 1	2 Lecture 24 Ch. 22/23
Notes					Worksheet 12
WEEK 16	5	6 **THURSDAY CLASSES**	7 **FRIDAY CLASSES, LAST DAY** Lecture 25 Ch. 24	8	9

Notes					
			Homework 11 due		

COURSE OUTLINE

Lecture	Outcomes	Chapter	Topic
1 and 2	3,4,5,10,11,12,13	9	Alkynes
3-6	1,2,3,4,10,11,12,13	17	Structure and Synthesis of Alcohols
3-6	1,3,10,11,12,13	17	Reactions of Alcohols
7 and 8	3,4,6,9,10,11,12,13	18	Ethers, Epoxides, and Thioethers
9-11	3,4,6,7,9,10,11,12,13	14	Conjugated Systems, Orbital Symmetry, and Ultraviolet Spectroscopy
12-14	6,7,8,13	15	Aromatic Compounds
15-17	3,4,7,9,10,11,12,13	16	Reactions of Aromatic Compounds
18-20	3,4,6,9,10,11,12,13	19	Ketones and Aldehydes
25	3,4,6,9,10,11,12,13	24	Amines
21 and 22	3,4,6,9,10,11,12,13	20	Carboxylic Acids
23	3,4,6,9,10,11,12,13	21	Carboxylic Acid Derivatives
24	3,4,9,10,11,12,13	22 and 23	Condensations and Alpha Substitutions of Carbonyl Compounds

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