Course Syllabus

Chemistry 2310 – Organic Chemistry I

Instructor Contact Information:

Dr. Bradley S. Davidson
Office: Widtsoe 341
Phone: (435) 720-3617
Email: brad.davidson@usu.edu
Skype: b.s.davidson

The instructor will communicate with students mainly using the Canvas Announcements and Discussions tools. For further communication, the preferred method is email, either directly or through Canvas. Please put "CHEM 2310" in the subject line of any email. You will typically receive responses within 24 to 48 hours. However, please allow an entire business day before emailing again on the same question or issue. Emails sent on Saturday or Sunday will receive a reply by Monday or Tuesday. Please do not expect to receive emails from your instructor late at night or on Saturdays or Sundays.

All times listed in this syllabus refer to the mountain time zone. As such, all due dates and times will be in mountain time. If you are enrolled from a geographic location outside this time zone, adjust your times, accordingly.

Office Hours: M 2:30 – 4:00 PM, Th 10:00 – 11:00 AM

Office hours can be either in person or online, using Adobe Connect, Skype, or Zoom. In person office hours will be in WIDT 341. Contact the instructor if you would like to arrange an online meeting.

Course Description:

This is the first course of a two-semester sequence covering the chemistry of organic chemicals. Students will gain an understanding of the physical properties, nomenclature, stereochemistry, and chemical reactivities of organic molecules, and will be able to describe chemical reactions and step-wise reaction mechanisms.

Course Format:

This course is 100% online. All course content is covered online, without face-to-face meetings. Online learning requires a significant amount of time and self-motivation. You will have work due every week. The course content is made accessible to you through the text book, lecture videos, practice problems, and other supplemental materials. Course content will also be discussed through posted discussion topics. Comprehension of the course materials often occurs independent of the instructor. If you struggle to keep up with assigned readings or to understand the course content in traditional classes, you may struggle even more in this course. You must hold yourself accountable for making sure you keep track with the course schedule. All materials are posted on Canvas and the instructor is available to answer questions and provide feedback. However, please realize that online learning isn’t the best fit for everyone. Take a look at some web resources (http://www.usnews.com/education/online-education/articles/2013/01/14/5-tips-to-succeed-in-an-online-course), to figure out if you are good match for taking an online course.

Course Learning Objectives:

Upon successful completion of this course, you will be able to:

1. Describe atomic and molecular structure and bonding, and properly illustrate organic molecules as Lewis, Kekulé, and skeletal structures.
2. Classify organic compounds by structure, employ IUPAC rules for naming, and identify conformational effects in organic compounds.
3. Predict chemical properties for various compounds, on the basis of their structures.
4. Identify the types of isomerism in organic compounds, recognize and classify chiral centers, and compare the differences in chemical and physical properties among these molecules.
5. Apply concepts of resonance and inductive effects to predict the chemical and physical properties for different functional groups and the reactivity of molecules containing these functional groups.
6. Draw and interpret reaction coordinate diagrams, relate the energetic changes associated with chemical reactions to equilibrium constants and rate, and differentiate kinetic versus thermodynamic control of reactions.

7. Propose electron-pushing mechanisms for chemical reactions, and use the concepts of resonance effect, inductive effect, steric hindrance, leaving group effect, nucleophilicity, and solvation to explain the chemo-, regio-, and stereoselectivity of the reactions.

8. Identify aromatic and antiaromatic compounds and discuss the chemical consequences of aromaticity.


Course Prerequisites:

Coursework prerequisite: CHEM 1220

Technology: You must have a computer with reliable high speed internet access to complete this course. Late assignments will not be accepted because of unreliable internet access.

- You will need Microsoft Office applications (Word, Power Point, and Excel), Adobe Acrobat, or a PDF viewer to open some of the course materials.
- If you do not have a computer at home with the necessary software or high speed internet access, use the computers available to you on campus.
- Please check your browser at the beginning of each semester and download appropriate software and plugins.

The Technical Requirements page identifies the browsers, operating systems, and plugins that work best with Canvas. If you are new to Canvas quickly review the Canvas Student Orientation materials.

Course Materials:


This course requires all-inclusive digital materials that are provided to you at a significantly lower price than traditional printed materials. These materials are paid for through your student tuition/fee account and are accessed through the Canvas course site. You may choose to opt-out of the all-inclusive materials and associated charges, but you will lose access to the required materials, which will have a negative effect on your performance in the course. Opt-out requests must be submitted by Jan. 27, 2020 at 11:59 pm Mountain Time, after which you will also be responsible for obtaining the required materials through your own means.

- Molecular model kit (optional)

Course Schedule:

<table>
<thead>
<tr>
<th>Module</th>
<th>Due Dates</th>
<th>Reading with LearnSmart</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1 – Structure and Bonding</td>
<td>1/6 – 1/14</td>
<td>Sections 1.1-1.16</td>
<td>LS1, AP1, HL1.1-HL1.4</td>
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<td>Chapter 2 – Acids and Bases</td>
<td>1/15 – 1/20</td>
<td>Sections 2.1-2.10, 2.12</td>
<td>LS2, AP2, HL2.1-HL2.3</td>
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<td>Chapter 4 – Alkanes</td>
<td>1/25 – 2/2</td>
<td>Sections 4.1-4.14, 4.16</td>
<td>LS4, AP4, HL4.1-HL4.4</td>
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<tr>
<td>Exam 1</td>
<td>2/3 – 2/4</td>
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<tr>
<td>Exam 1-2</td>
<td>2/5 – 2/7</td>
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<td>Chapter 5 – Stereochemistry</td>
<td>2/3 – 2/11</td>
<td>Sections 5.1-5.11</td>
<td>LS5, AP5, HL5.1-HL5.3</td>
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<td>Chapter 6 – Understanding Organic Reactions</td>
<td>2/12 – 2/17</td>
<td>Sections 6.1-6.15, 6.18</td>
<td>LS6, AP6, HL6.1-HL6.3</td>
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<td><strong>Exam 2</strong></td>
<td>3/16 – 3/17</td>
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<td><strong>Exam 2-2</strong></td>
<td>3/18 – 3/20</td>
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<td><strong>Chapter 10 – Alkenes</strong></td>
<td>3/28-4/5</td>
<td>Sections 10.1-10.7, 10.9-10.11</td>
<td>LS10, AP10, HL10.1-HL10.4</td>
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<td><strong>Exam 3</strong></td>
<td>4/6 – 4/7</td>
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<td><strong>Exam 3-2</strong></td>
<td>4/8 – 4/10</td>
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<td>Chapter 11 – Alkynes</td>
<td>4/8 – 4/12</td>
<td>Sections 11.1-11.5, 11.7, 11.9, 11.11, 12.1</td>
<td>LS11, AP11, HL11.1-HL11.4</td>
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<td><strong>Final Exam</strong></td>
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1LS=LearnSmart; AP=Application problems; HL=Highlight Videos

## Assignments and Grading Scheme:

<table>
<thead>
<tr>
<th>Assignment Type</th>
<th>Points</th>
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<tbody>
<tr>
<td>Three one-hour exams (3 x 200 pt)</td>
<td>600 pt</td>
</tr>
<tr>
<td>Best eleven out of twelve LearnSmart assignments (11 x 20 pt)</td>
<td>220 pt</td>
</tr>
<tr>
<td>Best eleven out of twelve application problems (11 x 20 pt)</td>
<td>220 pt</td>
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<tr>
<td>Highlight video questions (1 pt ea, up to 120 pt)</td>
<td>120 pt</td>
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<tr>
<td>On-line discussion topics (12 weeks x 10 pt)</td>
<td>120 pt</td>
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<tr>
<td>Comprehensive Final (300 pt)</td>
<td>300 pt</td>
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<tr>
<td><strong>Total Points:</strong></td>
<td><strong>1580 pt</strong></td>
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Grade Breakdown:

The grade received in the course is based on your performance on the exams, quizzes, homework assignments and discussion topics. Grades are guaranteed as given below for overall percentage score on all exams. Actual grade ranges may be curved somewhat lower, depending on the overall class average.

- A, A-: 89% or higher
- B+, B, B-: 78% or higher
- C+, C, C-: 66% or higher
- D+, D: 53% or higher

Procedures:

- **Exams:** The exams are meant to test your understanding of the topics covered in lecture, not your ability to repeat memorized problems. Expect some questions that require you to apply your understanding to new problems. Ultimately, because you are in this course to learn organic chemistry, exams are meant to offer learning opportunities.

  The format of the exams is a combination of 1) a written, free-response (50%) portion of the exam, where you will be expected to draw chemical structures and explain your answers, and 2) an online portion, composed of multiple choice, multiple answer, short answer, and pull-down menu questions (50%). A self-correcting approach to the online portion of the exam will be used. Correct answers are worth 4 pt. You will have the opportunity, after consulting your notes, textbook, even classmates, to repeat the multiple-choice portion of the exam by 11:59 PM on the Sunday after the exam. The average of your two multiple-choice results will apply toward your grade.

  There will be no planned make-up exams. It is possible to take an exam in advance, but only with a valid excuse and prearrangement with me. If you miss an exam without prearrangement, then you will receive a zero.

  Exams must be taken in a USU approved, proctored location. To do this, you will need to schedule a 90 min time slot at a USU testing center. If you are outside Utah, you can arrange for a proctor. Exams and proctors can be scheduled with the [USU Testing Center](http://testing.usu.edu).

  Addition mistakes or questions over exam grading should be discussed with me within one week following the return of the exam. No point adjustments will be made after this time.

- **Assignments:** You will be assigned three types of assignments within each module. Each assignment will typically be available from 8:00 AM on the first day scheduled for a module, until 11:59 PM on the due date. Note, the number of days allotted varies for each module. It is your responsibility to be aware of due dates.

  *LearnSmart reading and in-chapter problems.* As you read the assigned pages in the eText, you will periodically be asked questions to demonstrate your comprehension. The number and type of questions that you are asked will depend on your responses. If your responses demonstrate that you understand the topic, you will be sent back for more reading. If your responses show a lack of understanding, you will be presented with additional questions to help you increase your grasp of the content. Each LearnSmart assignment is worth 20 pt, awarded for completion.

  *Application problems.* These problems, also administered through McGraw-Hill Connect, will be a combination of structure drawing, matching, and fill-in. You will have an unlimited number of attempts at each homework assignment before the closing date. Only the best score will be counted. After the closing date practice problems will be opened for ungraded practice.

  For Application problems there are several types of assistance provided, which can be used as you complete the problems:

  - **eBook and resources:** Clicking on the eBook Link icon within a question will show you relevant readings. There is no point penalty for using this.

  - **Hint:** The View Hint link will offer a direct suggestion but incurs a 5% deduction from the question score (the deduction is only applied once per question).

  - **Check my work:** You can click the “check my work” icon to see if your answer is correct before submitting it for grading. This can only be used once per question.

  *Highlight videos.* For each chapter, there are between three and five highlight videos that focus on the most important concepts. Examples of exam-type problems are analyzed and solved. Each video includes an average of three inserted questions, each worth 1 pt. Highlight videos can be re-watched, and up to 120 pt can be applied to your grade.
Highlight videos are available on a website called PlayPosit. To access them, you will need to establish a free account and enroll in our course. To do this, follow this link to the PlayPosit website. Be sure to sign up with your name as it is listed in Canvas.

- Discussion Board: Each week, except exam weeks, there will be a posted discussion topic. Posting an intelligent, substantive (as judged by me) contribution to the discussion will be rewarded with 6 pt. Two thoughtful, content-related comments on classmates' posts will be worth another 2 pt each. The initial post will be due by Wednesday at 11:59 PM and the follow-up posts will be due by Sunday at 11:59 PM. All posts are expected to be unique (not a repeat of someone else’s post), thoughtful, respectful, and topic related. Please follow the general rules of Netiquette.

- Molecule of Interest: Each exam will include an extra credit question worth 5 pt pertaining to the "Molecule of Interest." A link will be provided to a molecule of special interest.

Teaching Assessment:

Assessment involves measuring student progress as well as teaching effectiveness. The following assessment strategies have been incorporated into this course.

- A pre-test/post-test approach will be used to measure comprehension and teaching of important concepts. The pre-test will be administered through Canvas and must be taken on your own time. The ten multiple choice questions of the pre-test will reappear in the final, in slightly altered form, to assess teaching and learning progress during the semester. If weaknesses are observed in specific subject areas, teaching methods will be reevaluated. If you take the pre-test, you will receive 5 points.

- IDEA Evaluations: Student evaluations will be used to evaluate course/instructor strengths and weaknesses. Constructive suggestions are welcome anytime. The on-line IDEA evaluation system provides a way for you to self-assess how well the course has helped you achieve the following general objectives.
  1. Have you gained factual knowledge about Organic Chemistry, including terminology, methods, and trends, as further described in the Detailed Learning Objectives, shown below?
  2. Have you learned fundamental principles, generalizations, and theories that that describe and explain chemical reactions and chemical properties?
  3. Have you further developed your ability to analyze and critically evaluate ideas, arguments, and scientific models.

University Policies and Procedures:

Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. Faculty Code Policy #403 further defines academic freedom and professional responsibilities.

Academic Integrity – "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to establish the higher level of conduct expected and required of all Utah State University students. The Honor Pledge: To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."

A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- Is a welcomed and valued member of Utah State University.

Academic Dishonesty:
The instructor of this course will take appropriate actions in response to Academic Dishonesty, as defined the University’s Student Code. Acts of academic dishonesty include but are not limited to:

**Cheating:**
Using, attempting to use, or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity will be considered as cheating. Unauthorized assistance includes:

- Working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done “individually;”
- Depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
- Substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work;
- Acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission;
- Continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity;
- Submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or engaging in any form of research fraud.

**Falsification:**
Altering or fabricating any information or citation in an academic exercise or activity is considered as falsification.

**Plagiarism:**
Representing, by paraphrase or direct quotation, the published or unpublished work of another person as one’s own in any academic exercise or activity without full and clear acknowledgment is plagiarism. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials.

**Sexual Harassment:**
Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature." If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Affirmative Action/Equal Employment Opportunity Office located in Old Main, Room 161, or call the AA/EEO Office at (435) 797-1266.

**Withdrawal Policy and "I" Grade Policy:**
Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

**Students with Disabilities:**
Students with ADA-documented physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC). Please contact the DRC prior to or as early in the semester as possible. Alternate formats for course content are available with advanced notice.

Contacting the Disability Resource Center (DRC):
- On Campus: Room 101 of the University Inn
- Phone: 435-797-2444
- [DRC Website](http://www.usu.edu/drc/)

Disability related resources for current students:
- [DRC Student Handbook](http://www.usu.edu/drc/currentstudents/handbook/)
Diversity Statement:

Regardless of intent, careless or ill-informed remarks can be offensive and hurtful to others and detract from the learning climate. If you feel uncomfortable in a classroom due to offensive language or actions by an instructor or student(s) regarding ethnicity, gender, or sexual orientation, contact:

- **Student Services** ([http://www.usu.edu/studentservices/](http://www.usu.edu/studentservices/)): (435) 797-1712, studentservices@usu.edu (mailto:studentservices@usu.edu), TSC 220
- **Student Advocates** ([http://www.usu.edu/ususa/legal/](http://www.usu.edu/ususa/legal/)): (435) 797-2912, TSC 340
- **Access and Diversity** ([http://www.usu.edu/accesscenter/](http://www.usu.edu/accesscenter/)): (435) 797-1728, access@usu.edu (mailto:access@usu.edu), TSC 315
- **Multicultural Programs** ([http://www.usu.edu/accesscenter/multiculture/](http://www.usu.edu/accesscenter/multiculture/)): (435) 797-1728, TSC 315
- **LGBTQA Programs** ([http://www.usu.edu/accesscenter/lgbtqa](http://www.usu.edu/accesscenter/lgbtqa)): (435) 797-GAYS, TSC 314
- **Provost's Office Diversity Resources** ([http://www.usu.edu/provost/faculty/diversity/](http://www.usu.edu/provost/faculty/diversity/)): (435) 797-8176

You can learn about your student rights by visiting: [The Code of Policies and Procedures for Students at Utah State University](http://www.usu.edu/studentservices/studentcode/)

**Course Summary:**

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<thead>
<tr>
<th>Date</th>
<th>Details</th>
<th>Due by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fri Jan 10, 2020</td>
<td><strong>Introduction to Connect Assignments</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2873035">https://usu.instructure.com/courses/579298/assignments/2873035</a>)</td>
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<td><strong>Pre-Test (extra credit)</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2873037">https://usu.instructure.com/courses/579298/assignments/2873037</a>)</td>
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<td>Sun Jan 12, 2020</td>
<td><strong>Discussion 1 – Introduction</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2827973">https://usu.instructure.com/courses/579298/assignments/2827973</a>)</td>
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<td>Tue Jan 14, 2020</td>
<td><strong>Chapter 1. Application Problems</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2873042">https://usu.instructure.com/courses/579298/assignments/2873042</a>)</td>
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<td><strong>Chapter 1. Structure and Bonding</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2873039">https://usu.instructure.com/courses/579298/assignments/2873039</a>)</td>
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<td>Sun Jan 19, 2020</td>
<td><strong>Discussion 2</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2827972">https://usu.instructure.com/courses/579298/assignments/2827972</a>)</td>
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<td>Mon Jan 20, 2020</td>
<td><strong>Chapter 2. Acids and Bases</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2873043">https://usu.instructure.com/courses/579298/assignments/2873043</a>)</td>
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<td><strong>Chapter 2. Application Problems</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2873046">https://usu.instructure.com/courses/579298/assignments/2873046</a>)</td>
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<td>Fri Jan 24, 2020</td>
<td><strong>Chapter 3. Introduction to Organic Molecules and Functional Groups</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2873047">https://usu.instructure.com/courses/579298/assignments/2873047</a>)</td>
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<td><strong>Discussion 3</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2827971">https://usu.instructure.com/courses/579298/assignments/2827971</a>)</td>
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<td>Thu Jan 30, 2020</td>
<td><strong>Exam 1-MC</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2827956">https://usu.instructure.com/courses/579298/assignments/2827956</a>)</td>
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<td><strong>Exam 1-MC2</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2827960">https://usu.instructure.com/courses/579298/assignments/2827960</a>)</td>
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<td>Sun Feb 2, 2020</td>
<td><strong>Chapter 4. Alkanes</strong> (<a href="https://usu.instructure.com/courses/579298/assignments/2873050">https://usu.instructure.com/courses/579298/assignments/2873050</a>)</td>
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