

# CIS 526 - Web Application Development

# CC 515 - Full Stack Web Development

## Previous Versions

*This syllabus covers both courses. They are taught using the same content.*

## Instructor Contact Information

- Instructor: Russell Feldhausen (russfeld AT ksu DOT edu)  
*I use he/him pronouns. Feel free to share your own pronouns with me, and I'll do my best to use them!*
- Office: DUE 2213, but I mostly work remotely from Kansas City, MO
- Phone: (785) 292-3121 (Call/Text)
- Website: <https://russfeld.me>
- Virtual Office Hours: By appointment via [Zoom](#). Schedule a meeting at <https://calendly.com/russfeld>

## Preferred Methods of Communication:

- Email: Email is the official method of communication for this course. Any emails sent to the instructor regarding this course should be answered within one class day.
- Discord: For short questions and discussions of course content and assignments, Discord is preferred since questions can be asked once and answered for all students. There is a [#cis-526\\_cc-515 channel](#) on the [K-State CS Discord Server](#) for this course. Students are encouraged to post questions there and use that space for discussion, and the instructor will strive to answer questions there as well.
- Phone/Text: *Emergencies only!* I will do my best to respond as quickly as I can.

## Prerequisites

- CIS 526: CIS 501, CIS 560 (Prerequisite or Concurrent Enrollment), and either CMST 135 or equivalent experience in HTML, CSS, and JavaScript with instructor permission.
- CC 515: CC 315, CC 410 (Prerequisite or Concurrent Enrollment), and either CC 120, CMST 135, or equivalent experience in HTML, CSS, and JavaScript with instructor permission.

*Students may enroll in CIS or CC courses only if they have earned a grade of C or better for each prerequisite to those courses.*

## Course Overview

Fundamental principles and best practices of web development, user interface design, web API design, advanced web interfaces, web development frameworks, single-page web applications, web standards and accessibility issues.

## Course Description

This course focuses on the creation of web applications - programs that use the core technologies of the world-wide-web to deliver interactive and dynamic user experiences. It builds upon a first course in authoring web pages using HTML/CSS/JavaScript, introduces the creation of web servers using the Node programming languages, and building sophisticated web clients using declarative component-based design frameworks like React.

## Student Learning Outcomes

The following are the learning objectives of this course:

1. Students will develop a thorough understanding of the http client request - server response pattern, and be able to implement multiple kinds of requests and responses, including HTML tags, browser-based JavaScript, programmatically, and with tools.
2. Students will understand and be able to make use of asynchronous programming, including creating original asynchronous functions and utilizing promises and the async/await key words.
3. Students will be able to develop traditional full-stack web applications using Node, a SQL database, and a Linux OS.
4. Students will be able to develop client-side [progressive] web applications using transpilation and minimization.
5. Students will be able to develop secure web applications using password authentication, cookies, and json web tokens.

## Major Course Topics

- The Document Object Model
- Responsive Web Design
- JavaScript Object Serialization Notation
- JavaScript Event Loop
- Asynchronous functions
- Promises
- async/await
- HTTP
- AJAX & Fetch
- Routing
- REST
- Form Serialization Formats
- Developing APIs
- Database Object Relational Mappers
- Template Rendering
- Single-page Applications
- Progressive Web Applications

## Course Structure

This course is divided in modules, which typically consist of a series of lesson content (as video lectures or online textbook materials) followed by a hands-on tutorial. The tutorials show how to take the ideas just discussed in the lessons and apply them in creating web applications in a step-by-step manner. Following every third module is a larger project assignment, where you will utilize the skills you've been developing from the lessons and tutorials to iteratively create a web application.

For the eight-week summer course, each cluster of three modules plus project should be completed in one week. There is a lot to learn and much of the learning involved is hands-on as you work on the code for tutorials and your projects. It is recommended you set aside 10-20 hours per week to focus on this course.

## The Work

There is no shortcut to becoming a great programmer or web developer. Only by doing the work will you develop the skills and knowledge to make you a successful web developer. This course is built around that principle, and gives you ample opportunity to do the work, with as much support as we can offer.

Lessons: Lessons are delivered in written or video (with written transcript) form. Sprinkled between lessons are activities and quizzes that check your understanding of the readings and lecture content.

Tutorials: Tutorials are delivered through Codio, and offer immediate, automatically generated feedback as you complete the assignments, letting you know if you've made a mistake or skipped a step. You can run these assessments as many times as needed until you have completed the project to your satisfaction.

Projects: The projects are more free-form - I want you to be able to flex your creative muscles and make a web app that both meets your customer's needs and reflects your own style and approach. These will be graded by hand using a rubric that focuses on functionality, code quality, accessibility, and aesthetics.

## Grading

In theory, each student begins the course with an A. As you submit work, you can either maintain your A (for good work) or chip away at it (for less adequate or incomplete work). In practice, each student starts with 0 points in the gradebook and works upward toward a final point total earned out of the possible number of points. In this course, each assignment constitutes a portion of the final grade, as detailed below:

- 15% - Activities & Quizzes
- 35% - Tutorials
- 50% - Projects

Up to 5% of the total grade in the course is available as extra credit. See the Extra Credit - Bug Bounty and Extra Credit - Helping Hand assignments for details.

Letter grades will be assigned following the standard scale:

- 90% - 100% → A
- 80% - 89.99% → B
- 70% - 79.99% → C
- 60% - 59.99% → D\*
- 50% - 0% → F

*\* Note that CS Majors must earn a C or better to use the CIS 526 course for their degree.*

## Submission, Regrading, and Early Grading Policy

As a rule, submissions in this course will not be graded until after they are due, even if submitted early. Students may resubmit assignments many times before the due date, and only the latest submission will be graded. For assignments submitted via GitHub release tag, only the tagged release that was submitted to Canvas will be graded, even if additional commits have been made. Students must create a new tagged release and resubmit that tag to have it graded for that assignment.

Once an assignment is graded, students are not allowed to resubmit the assignment for regrading or additional credit without special permission from the instructor to do so. In

essence, students are expected to ensure their work is complete and meets the requirements before submission, not after feedback is given by the instructor during grading. However, students should use that feedback to improve future assignments and milestones.

For the programming project milestones, it is solely at the discretion of the instructor whether issues noted in the feedback for a milestone will result in grade deductions in a later milestones if they remain unresolved, though the instructor will strive to give students ample time to resolve issues before any additional grade deductions are made.

Likewise, students may ask questions of the instructor while working on the assignment and receive help, but the instructor will not perform a full code review nor give grading-level feedback until after the assignment is submitted and the due date has passed. Again, students are expected to be able to make their own judgments on the quality and completion of an assignment before submission.

That said, a student may email the instructor to request early grading on an assignment before the due date, in order to move ahead more quickly. The instructor's receipt of that email will effectively mean that the assignment for that student is due immediately, and all limitations above will apply as if the assignment's due date has now passed.

## **Collaboration Policy**

In this course, all work submitted by a student should be created solely by the student without any outside assistance beyond the instructor and TA/GTAs. Students may seek outside help or tutoring regarding concepts presented in the course, but should not share or receive any answers, source code, program structure, or any other materials related to the course. Learning to debug problems is a vital skill, and students should strive to ask good questions and perform their own research instead of just sharing broken source code when asking for assistance.

That said, the field of web development requires the use of lots of online documentation and reference materials, and the point of the class is to learn how to effectively use those resources instead of "reinventing the wheel from scratch" in each assignment. Whenever content in an assignment is taken from an outside source, this should be noted somewhere in the assignment.

## Late Work

### Warning

I've found that students prefer having more strict deadlines than more flexibility in a summer course, and many times they will perform better in the course when deadlines are enforced. Therefore, deadlines will be strictly enforced this semester. Read this late work policy very carefully! If you are unsure how to interpret it, please contact the instructors via email. Not understanding the policy does not mean that it won't apply to you!

In this class, there is a tremendous amount of new skills to develop in a short amount of time. Falling behind *will* jeopardize your chances of successfully completing the course. Trying to complete late assignments while also working on new material will also make it unlikely that you will retain what you are trying to learn. It is critical that you keep on-track.

Any work submitted and graded after the due date is subject to a deduction of 10% of the total points possible on the assignment for each day that the assignment is late. For example, if an assignment is due on a Friday and is submitted the following Tuesday, it will be subject to a reduction of 40% of the total points possible, or 10% for each class day it was late. *These late penalties will be automatically entered by Canvas - contact the instructor if any grades appear to be incorrect.*

These deductions will only be applied to grades above 50% of the total points on the assignment. So, if you scored higher than 50%, your grade will be reduced by the late penalty down to a minimum grade of 50%. If you scored lower than 50% on the assignment, no deductions will be applied.

However, even if a module is not submitted on time, it must still be completed before a student is allowed to begin the next module. So, students should take care not to get too far behind, as it may be very difficult to catch up.

All course work must be submitted, and all interactively graded materials must be graded with the instructor, on or before the last day of the semester in which the student is enrolled in the course in order for it to be graded on time. No late work will be accepted after that date.

If you have extenuating circumstances, please discuss them with the instructor as soon as they arise so other arrangements can be made. If you know you have upcoming events that will prevent you from completing work in this course, you should contact the instructor ASAP and plan on working ahead before your event instead of catching up

afterwards. If you find that you are getting behind in the class, you are encouraged to speak to the instructor for options to catch up quickly.

## Incomplete Policy

Students should strive to complete this course in its entirety before the end of the semester in which they are enrolled. However, since retaking the course would be costly and repetitive for students, we would like to give students a chance to succeed with a little help rather than immediately fail students who are struggling.

If you are unable to complete the course in a timely manner, please contact the instructor to discuss an incomplete grade. Incomplete grades are given solely at the instructor's discretion. See the official [K-State Grading Policy](#) for more information. In general, *poor time management alone is not a sufficient reason for an incomplete grade.*

Unless otherwise noted in writing on a signed [Incomplete Agreement Form](#), the following stipulations apply to any incomplete grades given in this course:

1. Students will be given 6 calendar weeks from the end of the enrolled semester's finals week to complete the course
2. Students understand that access to instructor and GTA assistance may be limited after the end of an academic semester due to holidays and other obligations
3. If a student fails to resolve an incomplete grade after 6 weeks, they will be assigned an 'F' in the course. In addition, they will be dropped from any other courses which require the failed course as a prerequisite or corequisite.
4. For CC courses only:
  1. Students may receive at most two incompletes in Computational Core courses throughout their time in the program.
  2. Any modules in a future CC course which depend on incomplete work will not be accessible until the previous course is finished
    1. For example, if a student is given an incomplete in CC 210, then all modules in CC 310 will be inaccessible until CC 210 is complete



## Recommended Texts & Supplies

To participate in this course, students must have access to a modern web browser and broadband internet connection. All course materials will be provided via Canvas and Codio. Modules may also contain links to external resources for additional information, such as programming language documentation.

In particular you are encouraged to use:

- [Node Docs](#) - The documentation for the Nodejs platform and APIs.
- [Mozilla Developer Network](#) - A key reference explaining how browsers implement the web standards
- [CSS-Tricks](#) - A collection of guides and articles on using CSS to accomplish a variety of tasks
- [w3c.org](#) - The online home of the World-Wide-Web Consortium, the organization that sets web technology standards

This course offers an instructor-written textbook, which is broken up into a specific reading order and interleaved with activities and quizzes in the modules. It can also be directly accessed at <https://textbooks.cs.ksu.edu/cis526>.

Students who would like additional textbooks should refer to resources available on the [O'Reilly For Higher Education](#) digital library offered by the Kansas State University Library. These include electronic editions of popular textbooks as well as videos and tutorials.

## Subject to Change

The details in this syllabus are not set in stone. Due to the flexible nature of this class, adjustments may need to be made as the semester progresses, though they will be kept to a minimum. If any changes occur, the changes will be posted on the Canvas page for this course and emailed to all students.

## Academic Honesty

Kansas State University has an Honor and Integrity System based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, one's work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor and Integrity System. The policies and procedures of the [Honor and Integrity System](#) apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. A component vital to the Honor and Integrity System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation.

**For this course, a violation of the Honor Pledge will result in sanctions such as a 0 on the assignment or an XF in the course, depending on severity. Actively seeking unauthorized aid, such as posting lab assignments on sites such as Chegg or StackOverflow or asking another person to complete your work, even if unsuccessful, will result in an immediate XF in the course.**

The Codio platform can perform automatic plagiarism detection by comparing submitted projects against other students' submissions and known solutions. That information may be used to determine if plagiarism has taken place.

In this course, *unauthorized aid* broadly consists of *giving or receiving code to complete assignments*. This could be code you share with a classmate, code you have asked a third party to write for you, or code you have found online or elsewhere.

Authorized aid - which is not a violation of the honor policy - includes using the code snippets provided in the course materials, discussing strategies and techniques with classmates, instructors, TAs, and mentors. Additionally, you may use code snippets and algorithms found in textbooks and web sources if you clearly label them with comments indicating where the code came from and how it is being used in your project.

You should restrict your use of code libraries to those specified in the assignment description or approved by the instructor. You can ask for approval via Discord in the course channel, and if granted, this approval is valid for the entire class *for the specified assignment*.

While code libraries are an important and common tool in professional practice, at this point in your learning they can obscure how tasks are being accomplished, leaving your foundational knowledge incomplete. It is for this reason that we restrict the use of code libraries in the course.

## Standard Syllabus Statements

### Info

The statements below are standard syllabus statements from K-State and our program.

### **Students with Disabilities**

Students with disabilities who need classroom accommodations, access to technology, or information about emergency building/campus evacuation processes should contact the Student Access Center and/or their instructor. Services are available to students with a wide range of disabilities including, but not limited to, physical disabilities, medical conditions, learning disabilities, attention deficit disorder, depression, and anxiety. If you are a student enrolled in campus/online courses through the Manhattan or Olathe campuses, contact the Student Access Center at [accesscenter@k-state.edu](mailto:accesscenter@k-state.edu), 785-532-6441; for K-State Polytechnic campus, contact Julie Rowe, Diversity, Inclusion and Access Coordinator, at [jarowe@ksu.edu](mailto:jarowe@ksu.edu) or call 785-826-2971.

### **Expectations for Conduct**

All student activities in the University, including this course, are governed by the [Student Judicial Conduct Code](#) as outlined in the Student Governing Association [By Laws](#), Article V, Section 3, number 2. Students who engage in behavior that disrupts the learning environment may be asked to leave the class.

### **Mutual Respect and Inclusion in K-State Teaching & Learning Spaces**

At K-State, faculty and staff are committed to creating and maintaining an inclusive and supportive learning environment for students from diverse backgrounds and perspectives. K-State courses, labs, and other virtual and physical learning spaces

promote equitable opportunity to learn, participate, contribute, and succeed, regardless of age, race, color, ethnicity, nationality, genetic information, ancestry, disability, socioeconomic status, military or veteran status, immigration status, Indigenous identity, gender identity, gender expression, sexuality, religion, culture, as well as other social identities.

Faculty and staff are committed to promoting equity and believe the success of an inclusive learning environment relies on the participation, support, and understanding of all students. Students are encouraged to share their views and lived experiences as they relate to the course or their course experience, while recognizing they are doing so in a learning environment in which all are expected to engage with respect to honor the rights, safety, and dignity of others in keeping with the (K-State Principles of Community)[<https://www.k-state.edu/about/values/community/>].

If you feel uncomfortable because of comments or behavior encountered in this class, you may bring it to the attention of your instructor, advisors, and/or mentors. If you have questions about how to proceed with a confidential process to resolve concerns, please contact the Student Ombudsperson Office. Violations of the [student code of conduct](#) can be reported [here](#). If you experience bias or discrimination, it can be reported [here](#).

## Netiquette

### Info

This is our personal policy and not a required syllabus statement from K-State. It has been adapted from [this statement](#) from K-State Global Campus, and the [Recurse Center Manual](#). We have adapted their ideas to fit this course.

Online communication is inherently different than in-person communication. When speaking in person, many times we can take advantage of the *context* and *body language* of the person speaking to better understand what the speaker *means*, not just what is said. This information is not present when communicating online, so we must be much more careful about what we say and how we say it in order to get our meaning across.

Here are a few general rules to help us all communicate online in this course, especially while using tools such as Canvas or Discord:

- Use a clear and meaningful subject line to announce your topic. Subject lines such as “Question” or “Problem” are not helpful. Subjects such as “Logic Question in Project 5, Part 1 in Java” or “Unexpected Exception when Opening Text File in Python” give plenty of information about your topic.

- Use only one topic per message. If you have multiple topics, post multiple messages so each one can be discussed independently.
- Be thorough, concise, and to the point. Ideally, each message should be a page or less.
- Include exact error messages, code snippets, or screenshots, as well as any previous steps taken to fix the problem. It is much easier to solve a problem when the exact error message or screenshot is provided. If we know what you've tried so far, we can get to the root cause of the issue more quickly.
- Consider carefully what you write before you post it. Once a message is posted, it becomes part of the permanent record of the course and can easily be found by others.
- If you are lost, don't know an answer, or don't understand something, speak up! Email and Canvas both allow you to send a message privately to the instructors, so other students won't see that you asked a question. Don't be afraid to ask questions anytime, as you can choose to do so without any fear of being identified by your fellow students.
- Class discussions are confidential. Do not share information from the course with anyone outside of the course without explicit permission.
- Do not quote entire message chains; only include the relevant parts. When replying to a previous message, only quote the relevant lines in your response.
- Do not use all caps. It makes it look like you are shouting. Use appropriate text markup (bold, italics, etc.) to highlight a point if needed.
- No feigning surprise. If someone asks a question, saying things like "I can't believe you don't know that!" are not helpful, and only serve to make that person feel bad.
- No "well-actually's." If someone makes a statement that is not entirely correct, resist the urge to offer a "well, actually..." correction, especially if it is not relevant to the discussion. If you can help solve their problem, feel free to provide correct information, but don't post a correction just for the sake of being correct.
- Do not correct someone's grammar or spelling. Again, it is not helpful, and only serves to make that person feel bad. If there is a genuine mistake that may affect the meaning of the post, please contact the person privately or let the instructors know privately so it can be resolved.
- Avoid subtle -isms and microaggressions. Avoid comments that could make others feel uncomfortable based on their personal identity. See the syllabus section on Diversity and Inclusion above for more information on this topic. If a comment makes you uncomfortable, please contact the instructor.
- Avoid sarcasm, flaming, advertisements, lingo, trolling, doxxing, and other bad online habits. They have no place in an academic environment. Tasteful humor is fine, but sarcasm can be misunderstood.

As a participant in course discussions, you should also strive to honor the diversity of your classmates by adhering to the [K-State Principles of Community](#).

## **Face Coverings**

All students are expected to comply with K-State's face mask policy. As of August 2, 2021, everyone must wear face masks over their mouths and noses in all indoor spaces on university property, including while attending in-person classes. This policy is subject to change at the university's discretion. For additional information and the latest on K-State's face covering policy, see [this page](#).

## **Academic Freedom Statement**

Kansas State University is a community of students, faculty, and staff who work together to discover new knowledge, create new ideas, and share the results of their scholarly inquiry with the wider public. Although new ideas or research results may be controversial or challenge established views, the health and growth of any society requires frank intellectual exchange. Academic freedom protects this type of free exchange and is thus essential to any university's mission.

Moreover, academic freedom supports collaborative work in the pursuit of truth and the dissemination of knowledge in an environment of inquiry, respectful debate, and professionalism. Academic freedom is not limited to the classroom or to scientific and scholarly research, but extends to the life of the university as well as to larger social and political questions. It is the right and responsibility of the university community to engage with such issues.

## **Campus Safety**

Kansas State University is committed to providing a safe teaching and learning environment for student and faculty members. In order to enhance your safety in the unlikely case of a campus emergency make sure that you know where and how to quickly exit your classroom and how to follow any emergency directives. To view additional campus emergency information go to the University's main page, [www.k-state.edu](http://www.k-state.edu), and click on the Emergency Information button, located at the bottom of the page.

## Student Resources

K-State has many resources to help contribute to student success. These resources include accommodations for academics, paying for college, student life, health and safety, and others found at [www.k-state.edu/onestop](http://www.k-state.edu/onestop).

## Student Academic Creations

Student academic creations are subject to Kansas State University and Kansas Board of Regents Intellectual Property Policies. For courses in which students will be creating intellectual property, the K-State policy can be found at [University Handbook, Appendix R: Intellectual Property Policy and Institutional Procedures \(part I.E.\)](#). These policies address ownership and use of student academic creations.

## Mental Health

Your mental health and good relationships are vital to your overall well-being. Symptoms of mental health issues may include excessive sadness or worry, thoughts of death or self-harm, inability to concentrate, lack of motivation, or substance abuse. Although problems can occur anytime for anyone, you should pay extra attention to your mental health if you are feeling academic or financial stress, discrimination, or have experienced a traumatic event, such as loss of a friend or family member, sexual assault or other physical or emotional abuse.

If you are struggling with these issues, do not wait to seek assistance.

- [Kansas State University Counseling Services](#) offers free and confidential services to assist you to meet these challenges.
- [Lafene Health Center](#) has specialized nurse practitioners to assist with mental health.
- [The Office of Student Life](#) can direct you to additional resources.
- [K-State Family Center](#) offers individual, couple, and family counseling services on a sliding fee scale.

- [Center for Advocacy, Response, and Education \(CARE\)](#) provides free and confidential assistance for those in our K-State community who have been victimized by violence.

For Kansas State Polytechnic Campus:

- [Kansas State Polytechnic Counseling Services](#) offers free and confidential services to assist you to meet these challenges.
- [The Kansas State Polytechnic Office of Student Life](#) can direct you to additional resources.

## **University Excused Absences**

K-State has a [University Excused Absence policy \(Section F62\)](#). Class absence(s) will be handled between the instructor and the student unless there are other university offices involved. For university excused absences, instructors shall provide the student the opportunity to make up missed assignments, activities, and/or attendance specific points that contribute to the course grade, unless they decide to excuse those missed assignments from the student's course grade. Please see the policy for a complete list of university excused absences and how to obtain one. Students are encouraged to contact their instructor regarding their absences.

## **Copyright Notice**

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