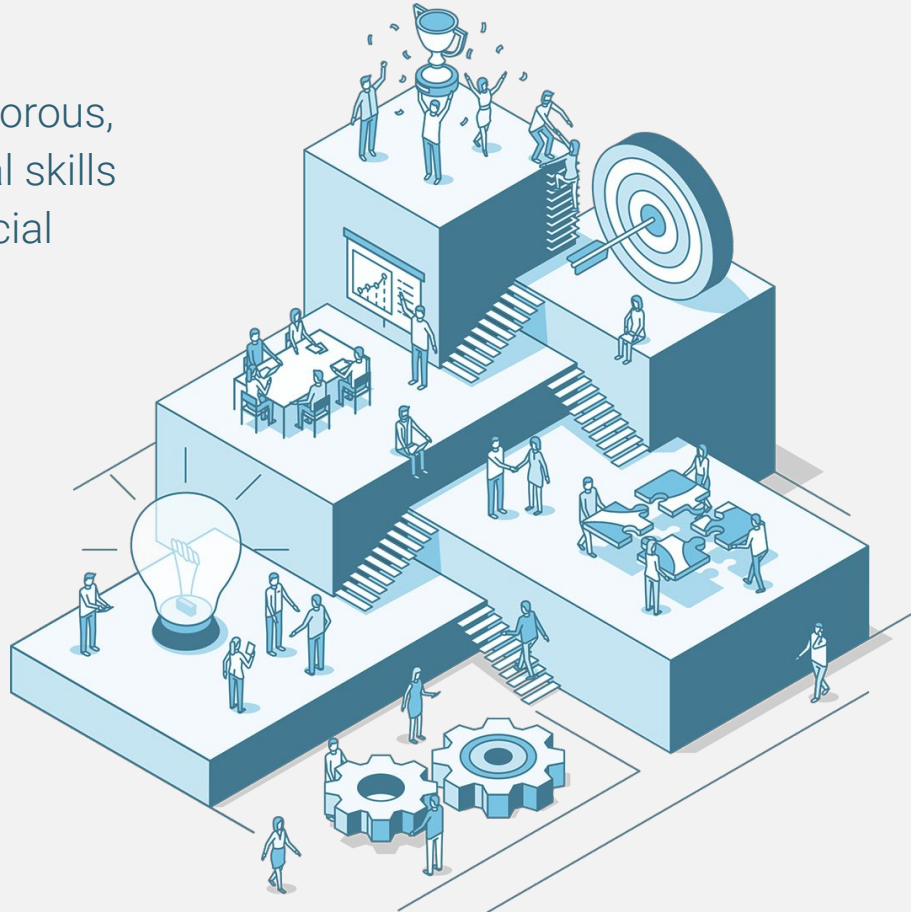
AI Boot Camp

Syllabus

AI Bootcamp Syllabus

Section 1: Course Overview

Welcome to the AI Bootcamp! The program is rigorous, fast-paced, and focused on the practical, technical skills needed to solve data, machine learning, and artificial intelligence problems. Throughout the course, you will gain proficiency in numerous marketable technologies, including Python, Unsupervised and Supervised Machine Learning, Transformers, Natural Language Processing, AI Applications, Time Series Forecasting, and AI & Data Ethics.



Course Outcomes

By the time you graduate, you will be able to:

01 Create Python-based scripts to automate the cleanup, restructuring, and rendering of large, heterogeneous datasets

02 Interact with APIs using Python Requests and JSON parsing techniques.

03 Create in-depth graphs, charts, and tables utilizing a wide-variety of data-driven programming languages and libraries.

04 Apply machine learning techniques to gain knowledge and solve problems.

05 Use unsupervised machine learning models to categorize unlabeled data.

06 Use supervised machine learning models trained on labeled data to make predictions about data.

07 Evaluate and improve the performance of machine learning models by using test data, metrics, and optimization techniques.

08 Use neural networks and deep learning models to make predictions about data.

09 Determine the sentiment of vector-encoded text using NLP and transformers.

10 Apply the fundamentals of NLP and transformer models to describe how Generative AI creates content.

11 Describe recent innovations in AI and their impact on the field of AI.

Curriculum

You will begin by learning the core fundamentals of Python and then move to more complex concepts like machine learning, NLP, and more. The course is broken into three sections organized into weekly modules. There is group project at the end of each section of the curriculum.

Section	**Section 1:** **Programming for AI** (Modules 1–10)	**Section 2:** **Machine Learning** (Modules 11–17)	**Section 3::** **AI Innovations** (Modules 18–24)
Description	Learn AI and machine learning fundamentals, then develop your coding skills so that you can start building your own AI models and applications. You'll learn about AI and its impact, then cover Python fundamentals with a focus on skills needed to manipulate data for training AI models. At the end of this unit, you'll start using data to make predictions about the future.	Now that you know the basics of AI and you have built strong programming skills, you are ready to create machine learning models to make predictions and solve problems. You'll create and use unsupervised and supervised learning models, then apply techniques to optimize the predictions you make with these modules. At the end of this unit, you'll learn about AI ethics and data regulations so that you can use your new skills legally and ethically.	The final units of this course focus on advanced, cutting edge AI and machine learning topics. You'll learn about complex neural network and deep learning models, then explore natural language processing techniques. The course culminates with a module on pre-trained transformer models, the engine behind recent generative AI innovations, and a week on emerging topics in AI, covering active areas of research and development. Then you'll pull it all together with a final project to apply your skills.
What You'll Learn	• AI and Machine Learning fundamentals • Python programming for AI • Data processing and analysis with Pandas • Sourcing data using APIs • Data visualization • Making predictions with data	• Unsupervised learning models • Supervised learning models • Model-Fit-Predict process • Optimizing machine learning models • AI ethics and regulations	• Neural networks and deep learning models • Natural language processing techniques • Transformers and their applications • Emerging topics in AI

Section 2: Course Structure

Learning Experience

Each week of your course is structured around a specific topic and set of skills.

The course is designed to help you become proficient in those skills. Each week you will do the following:

Attend the virtual classes and office hours	Submit Challenges
You'll have three instructor-led virtual classes every week via Zoom. During these classes, the instructional staff will both lead demonstrations and guide you through independent activities and interactive group work in breakout rooms. In addition, you'll have opportunities to attend office hours led by your instructor and/or TA.	You'll cap off most weeks by demonstrating the skills that you learned via submitting the Challenge assignment. The Challenges are graded assignments that you'll receive feedback on.

Virtual Classes

During virtual classes, your instructional team will lead demonstrations, as well as guide you through independent activities and interactive group work in breakout rooms.

What do I need to know about virtual classes?

1. Each virtual class is a 3-hour class on Zoom.
2. Open office hours are held before every class.
3. You can miss no more than 4 classes.
4. Class recordings are available in Bootcamp Spot.

How do I prepare for class?

Check out your Getting Ready for Class page in Bootcamp Spot for downloadable class activity files and details on which lessons to complete before each class.

Learning Technology

The bootcamp learning experience is centered on the following three technologies:

Bootcamp Spot	Our learning environment Bootcamp Spot is built on the leading cloud-based Canvas Learning Management System. This is your main hub for all course curriculum and assignments.
Slack	Slack, the popular business collaboration tool, is our core learning community space. On Slack, you will communicate with peers and instructional staff to celebrate victories and troubleshoot challenges. You can access Slack through your web browser or install the app on your computer and/or mobile device.
Zoom	Zoom is where we hold all virtual classes. This video conferencing software allows us to connect in real-time with video, audio, screen sharing, and chat. You will access Zoom directly through the course. Be sure to have your headset with mic and webcam ready. We also highly recommend having a second monitor during these sessions so that you can practice coding as you interact with your classmates.

Minimum Technology Requirements

To successfully use the tools and technologies required in this course, you need the right equipment.

Here's what you need to get started	Here's what you'll need before your first virtual session:
Laptop with Mac or Windows operating system (Note that you cannot use Linux in this course.)	Webcam
8 GB RAM and 64-bit dual processor	Headphones with a microphone
Hard drive must have at least 64GB of AVAILABLE hard drive space	An external monitor that is compatible with your laptop (highly recommended for Zoom sessions)
High-speed internet connection (We recommend a download speed of at least 25 Mbps and an upload speed of at least 5 Mbps.)	

Course Feedback

We believe in continually improving our program, whether it's building in more targeted practice to support your learning, adding new content to address the evolving needs of a dynamic industry, or providing your instructor with innovative ideas to tailor the experience for your class. For this reason, we ask for your feedback at the end of each module, at the course midpoint, and at the end of the program. We appreciate your honest responses.

Section 3: Course Assessments and Requirements

Grading Policy

For each assignment, you will receive numerical and letter grades as shown in the following table. You will receive an Incomplete for assignments that do not meet the baseline requirements. All assignments that do not receive incompletes, count toward graduation requirements. See your enrollment agreement for any minimum grade requirements.

A+	98-100	**B+**	88–89	**C+**	78–79	**D+**	68–69	**F**	< 60
A	93–97	**B**	82–87	**C**	72–77	**D**	62–67		
A–	90–92	**B–**	80–82	**C–**	70–72	**D–**	60–62		

Assessment Criteria

You will receive an overall grade for the course based on the following. Note that your two lowest Challenge assignment scores (or skipped assignments) will be dropped.

Assessment	Description	Number	% of Final Grade
Challenge Assignments	Individual assignments. You will receive rubric-based feedback and the lowest two grades will be discarded.	12	60%
Projects	Three projects throughout the course, marking the end of each section of the course. Working in a small group, you will select, develop, and present a project that demonstrates the skills you learned.	3	40%

Graduation Requirements

Graduates of the course will receive a certificate of completion from the university. To graduate from this course and receive your certificate, you must fulfill the following requirements:

01 Miss no more than four required virtual classes (via Zoom).

02 Complete all three projects.

03 Miss no more than two Challenge assignments.

If your university requires additional graduation requirements, these will be communicated out to you by your Student Success Advisor during the first week of class.

Please contact your Student Success Advisor with any questions regarding attendance requirements.

Section 4: Support

Support Team

Student Success Team (SSA)

- Attendance and Course Requirements
- Navigating Concerns
- Time Management and Success Planning

Instructional Team

- Academic Concerns and Support
- Hosts Office Hours
- Grade Submissions

Central Support

- Technical Issues with Canvas(BCS)
- Trouble Accessing the Live Classroom
- Technical Errors Submitting an Assignment

Resources

1. Xpert 24/7

Xpert is available **24 hours a day** in **BootCamp Spot** to answer detailed questions about the course material.

2. AskBCS

Learning Assistants (LAs) are available to assist when Xpert isn't able to. Access LAs via **AskBCS app** in your class **Slack** Workspace.

3. Office Hours

Office hours are held before and after each class. Designated time for learners to ask questions, receive support with challenges, or review specific lessons. Support provided by Instructional teams.

4. Tutoring

Tutoring is limited and sessions are available on a first-come, first-served basis.Tutors provide assistance with broader topics that go beyond a single error or question, including diving deeper into the course content

Support: Tips for Success

We're excited that you've committed to this Bootcamp. It may be difficult at some points, but with your dedication and our support, you will have the tools you need to thrive.

1. Establish your weekly schedule upfront. Identify a safe, quiet place to work and discuss your plans with family and friends to ensure you get the needed support.
2. Sync your class calendar to your phone or web calendars so that your assignment and virtual class dates are always handy. Your learning environment contains an easy iCal link.
3. Attend as many Office Hour sessions throughout the week as you can.
4. Remember that you are not alone, especially early on in the course. If you are struggling, it means that others are too. Make connections. Help your peers and ask for their help as needed. Set up a study group.
5. Connect with your Student Success Advisor (SSA) for any non-curriculum support. Your SSA is entirely dedicated to your success and can guide you with any support you need.
6. Focus on the big picture—beyond the specific skills of the week. A key element of this boot camp is "learning how to learn." Skills will change as technology changes, but the critical thinking techniques you learn in this course will help you evolve with the field.
7. Celebrate your wins and those of your peers. If you're feeling proud of a creation or a hurdle you've overcome, share it in Slack!

Section 5: Expectations and Policies

Time Expectations

You should expect to spend about 5–10 hours a week working on Weekly challenges outside of class. But, the exact amount of time that you spend will depend on several factors, including your pace, the difficulty of the week's material, and your attendance at optional sessions. It's a good idea to track yourself early in the course to identify how long you spend on each section and to adjust expectations accordingly.

Late Assignment Policy

All the weekly Challenge assignments are due at 11:59 p.m. university time on the 3rd class of the following module. It's important that you follow these dates to both stay on target and receive timely feedback. The program moves fast. So, you'll find it difficult to catch up if you fall behind. You may skip two Challenge assignments if you wish. In those cases, you submit the assignment as a statement that you're skipping it. You must submit all the work by the last day of the course.

Prerequisites

There are no prerequisites for the course. However, you must have fundamental computer skills and be comfortable using the internet and. This course covers programming skills commonly used in machine learning and AI fields. You are not required to have any programming experience, but should be ready to learn how coding languages work.

Communication Guidelines

At times, a bootcamp can be stressful as you fight to crack the code of emerging skills. Therefore, it's important to be mindful of the needs of your peers and support teams and be courteous in how you communicate. This is especially true in online communication spaces such as email or Slack, where it's easy to misinterpret comments. Consider the following communication guidelines:

1. Use encouraging, supportive tones when interacting with peers.
2. Try to help peers who are stuck on a topic.
3. Take opportunities to thank your support team for their help.
4. Avoid yelling, sarcasm, and abusive language directed at peers or support team members.
5. Be clear and specific in all of your help requests. Include screenshots and locations for content trouble spots so that your support team and peers can assist efficiently.

Expectations and Policies

Code of Conduct/ Academic Honesty	You are expected to work independently on all of your assignments and quizzes and submit your own work. Any violations of the university's academic honesty policy may result in your removal from the program. Please consult with your program success manager if you have any questions about the university's policy.
Drop Policy	In the event you are not able to take the course, you can drop within the timeframe outlined in your enrollment agreement and receive a refund of your balance paid. After the first full week, you are required to fulfill your tuition payments regardless of your status in the course. If you wish to drop, you must contact your SSA.
Tutoring Policy	We offer tutoring for students who need additional support through one-on-one, 50-minute remote online sessions. In order to schedule a tutoring session, you must have access to your course in Bootcampspot and be in good standing with class attendance, payment, and assignment submissions. For more information about tutoring, review Tutoring Guidelines for Learners.
Career Services Policy	Your career team is accessible to students from the start of their program. Navigate to the "Career Services" tab to get more information. • **Career Engagement Network (CEN):** Upon enrollment, you gain access to the Career Engagement Network – which includes asynchronous learning resources, online career events, and a curated job board. • **Career coaching and material reviews:** From day one of your boot camp, you have access to professional material reviews and one-on-one career coaching. These services are available throughout your boot camp and up to 3 months post-graduation. Email the career team anytime during your program and after at cssupport@bootcampspot.com (or cssupportaustralia@bootcampspot.com for Australian students).

Accessibility and Privacy Policies

Our program is designed to make learning accessible to all students. We optimize content for screen readers and use captioning on videos, and our technology and course design meets WCAG 2.0 standards. If you require additional assistance, please reach out to your SSA.

The following links display the accessibility policies for technology used in the course:

1. Canvas
2. Slack
3. Zoom
4. Learnosity

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