HCC | HOUSTON COMMUNITY COLLEGE

Division of Digital and Information Technology
Computer Systems, Networking, and Telecommunications Department
https://www.hccs.edu/programs/areas-of-study/science-technology-engineering--math/computer-systems-networking--telecommunications/

ITAI 1370: Artificial Intelligence History Theory & Platforms # 28675
Fall 2020 | 12 Weeks (9.21.2020-12.13.2020)
Online
3 Credit Hours | 96 hours per semester

Instructor Contact Information

Instructor:	G. Raymond Brown, Ph.D.	Office Phone:	713-718-8010
Office:	West Loop, Room 152	Office Hours:	M/W 12:00 pm – 1:00 pm
HCC Email:	g.brown@hccs.edu	Office Location:	West Loop Campus

Please feel free to contact me concerning any problems that you are experiencing in this course. Your performance in my class is very important to me. I am available to hear the concerns and discuss course topics.

Instructor's Preferred Method of Contact
I will respond to emails within 24-hours, Monday through Friday; I will reply to weekend messages on Monday mornings. Please use the Eagle Online (Canvas) Inbox tool to send me emails.

What's Exciting About This Course

Welcome, you just selected the right course! There isn't a more necessary topic on the planet today. Artificial intelligence (AI) will affect everyone and everything. Our goal in providing the course is to step up the pace in educating as many people as possible, as fast as possible, about the key topics involved in Artificial Intelligence. In this beginning course we introduce you to a "sampling" of the important subjects and how far things have come.

We will present the finest information from the very best experts and institutions like MIT, IBM, Nvidia, Stanford, CalTech, CMU, Microsoft, Google, Amazon and others. You will learn the basics about the very "BEST PRACTICES."

We will go like the wind and provide you with as much information and training as you think you can hold. You should be taking this course if you: 1) LOVE the subject, 2) Need to find that high paying dream job or 3) you need to KNOW the real truth about the topics that will truly change your business, the marketplace and how to get ahead of the curve in any industry before it is too late. Our job is to properly prepare you with the fundamentals so

you can be quickly effective or continue to learn on a valuable path. You will have unprecedented access to the finest resources, experts and "Know-How" as well as the opportunity to view the latest tools/equipment being used across most industries.

AI isn't new, it has been highly accelerated to warp speed because of GPU's, COVID-19 and Cloud Computing. Right now, there are not enough people to do the jobs required to move AI into Healthcare, Cybersecurity, Oil and Gas, Telecommunications, Defense and Education quickly enough to meet the demand. We are counting on you! Buckle-Up! This is a Great Course!

My Personal Welcome

Welcome to ITAI 1370. My name is G. Brown, PhD, and I am your Instructor and the Program Coordinator for the New Artificial Intelligence Program at Houston Community College. We are delighted to have you enrolled in the first course "Artificial Intelligence History, Theory and Platforms".

Please read **the syllabus** for the course description, pre-requisites, student learning outcomes, required textbook, instructional material, course assignments/assessments, as well as other course policies (participation, makeup, etc). Pay special attention to the **Course Calendar** section for assignments/assessments due dates.

As the course progresses, I am available to support you if you need help in any aspect of the course. The fastest way to reach me is through the Canvas Inbox e-mail. If, for any reason, you can't access Canvas, you can reach me at my HCC e-mail (g.brown@hccs.edu). The best way to really discuss issues is in-person (online for now). I'm available during posted office hours to tackle the questions. My goal is for you to move on to the other courses or interests with a firm and complete foundation and understanding about the "best basic practices of A.I." We have put together one of the most exciting, interesting and informative Introductory courses available, so please visit me, or contact me by email, whenever you have a question.

Prerequisites and/or Co-Requisites

Must be at college-level skills in reading, writing and math. Otherwise there is no prerequisite. Please be aware of policies in the HCCS Student Handbook.

Canvas Learning Management System

This course uses Canvas (https://eagleonline.hccs.edu) to deliver the course online. All assignments, exams, labs and activities are posted on Canvas. When our campuses re-open , you may use HCCS Open Lab locations to access the Internet, Canvas and HCC-provided software. **USE FIREFOX OR CHROME AS THE INTERNET BROWSER**.

HCC Online Information and Policies
Here is the link to information about HCC Online classes including the required Online Orientation (now called the Online Course Information) for all fully online classes: http://www.hccs.edu/online/

Scoring Rubrics, Sample Assignments, etc.
Look in Canvas for the scoring rubrics for assignments, samples of class assignments, and other information to assist you in the course.   https://eagleonline.hccs.edu/login/ldap

Instructional Materials

Textbook Information

There is no required textbook. We make extensive use of information available on the web.

Supplemental Materials

Supplemental materials will be copious, primarily as external links and PDF, PowerPoint, Word and other files, all available through the Canvas course site.

Required Software

The recommended web browser is Chrome. You should also have the Microsoft Office 365 suite of applications. The free Libre Office or Open Office suites may be used in place of MS Office 365. You need also have the following free applications: Adobe Acrobat Reader (for PDF files), Python and Jupyter notebooks.

Other Instructional Resources

HCC Open-Labs
HCC provides computer labs at most campuses. Information on HCC open-labs can be found at: http://www.hccs.edu/departments/division-of-instructional-services/institute-for-instructional-engagement--development/open-lab-schedule/

Computer Science Open Labs and Tutoring
The Computer Science Department provides department computer labs, monitored by a lab tech (tutor) who can help with computer science assigned coursework. Go to the link below for more information. Select **Face-to-Face** tutoring. Leave **Any** for the College field, and then put **Artificial Intelligence** for the Subject. (While the campuses are closed for the COVID-19 pandemic, only online tutoring is available.)

https://hccs.edu/find-a-tutor

HCC Tutoring
HCC provides free, confidential, and convenient academic support, including writing critiques, to HCC students in an online environment and on campus. Tutoring is provided by HCC personnel in order to ensure that it is contextual and appropriate. Visit the HCC Tutoring Services website for services provided.

Libraries
The HCC Library System consists of 9 libraries and 6 Electronic Resource Centers (ERCs) that are inviting places to study and collaborate on projects. Librarians are available both at the libraries and online to show you how to locate and use the resources you need. The libraries maintain a large selection of electronic resources as well as collections of books, magazines, newspapers, and audiovisual materials. The portal to all libraries' resources and services is the HCCS library web page at http://library.hccs.edu.

Supplementary Instruction
Supplemental Instruction is an academic enrichment and support program that uses peer-assisted study sessions to improve student retention and success in historically difficult courses. Peer Support is provided by students who have already succeeded in completion of

the specified course, and who earned a grade of A or B. Find details at
http://www.hccs.edu/resources-for/current-students/supplemental-instruction/.

Course Overview

ITAI 1370 Artificial Intelligence History Theory and Platforms is the introductory course for the Artificial Intelligence AAS program. It provides a general overview of artificial intelligence.

Core Curriculum Objectives (CCOs)

ITAI 1370 satisfies Component Area Option in the HCCS core curriculum. The HCCS Core Curriculum Committee has specified that the course address the following core objectives:

- *Critical Thinking*: Students will demonstrate the ability to engage in inquiry and analysis, evaluation and synthesis of information, and creative thinking by completing the class project and assignments, along with answering questions on quizzes and exams.
- *Communication Skills*: Students will demonstrate effective development, interpretation and expression of ideas through written, oral, and visual communication by completing assignments and participating in online or in-class discussions.
- *Quantitative and Empirical Literacy*: Students will demonstrate the ability to draw conclusions based on the systematic analysis of topics using observation, experiment, and/or numerical skills by completing assignments, and answering questions on quizzes and exams.

Program Student Learning Outcomes (PSLOs)

Can be found at:
https://www.hccs.edu/programs/areas-of-study/science-technology-engineering--math/artificial-intelligence/

Course Student Learning Outcomes (CSLOs)

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

1. Demonstrate the difference between machine learning and artificial intelligence giving a few samples of image segmentation, training a neural network and documenting these examples in a Jupyter Notebook.
2. Describe the process, meaning and structure of neural networks, deep learning and machine learning (document this in a Jupyter Notebook).
3. Describe an ethical position from which responsible development of artificial intelligence can proceed by providing an essay about one of the more important topics challenging society.
4. Describe the role artificial intelligence can play in various computing platforms, from IoT devices, robots, traditional corporate networks, swarms (of simple robots or drones) to the world wide web. Students will be asked to present their findings as a collaborative team presentation.
5. Configure a Github and Wiki to document team projects in building an AI Machine Learning platform.
6. Construct a financial feasibility for a typical business AI project in market research.

Learning Objectives

Learning Objectives for each CSLO are under development.

Student Success

Expect to spend at least twice as many hours per week outside of class as you do in class studying the course content. Additional time is required for the assignments. The assignments provided will help you practice the concepts discussed in class lectures and hone your hands-on skills. Successful completion of this course requires a combination of the following:
- Reading the materials provided from the Internet
- Critically viewing the videos provided from the Internet
- Attending class in person and/or online
- Working with your teammates to complete assignments
- Participating in class activities

There is no short cut for success in this course; it requires reading and studying the material and more importantly completing the assignments.

Instructor and Student Responsibilities

As your Instructor, it is my responsibility to**:**
- Provide the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective learning environment through learner-centered instructional techniques
- Provide a description of assignments
- Inform students of policies such as attendance, withdrawal, tardiness, and making up assignments
- Provide the course outline and class calendar
- Arrange to meet with individual students as needed

As a student, it is your responsibility to**:**
- Attend class in person and/or online
- Participate actively by reading and reviewing course material, interacting with classmates, and responding promptly in your communication with your instructor
- Complete the required assignments and exams
- Ask for help when there is a question or problem
- Keep copies of all paperwork, including this syllabus, handouts, and all assignments
- Be aware of and comply with academic honesty policies in the HCCS Student Handbook

Assignments, Exams, and Activities

Assignments and Labs

All Assignments and Labs are team activities. Work with your teammates to complete these activities such that all team members fully understand what the team submits for the activity, and that the submission meets the announced deadline. These submissions are graded as technical reports. The Assignment submissions are text documents which may include tables, graphs and images. The Lab report submissions are video technical reports featuring the work of the team.

Discussions

Discussions are primarily used by students to ask questions about Assignments or Labs, or to display what their team has learned from them. Discussions contribute to the participation grade.

Term Project

Each team chooses a topic for their Term Project from a list provided by the Instructor. The Term Project submission is a video technical report featuring the work of the team.

Midterm Exam

All exams will be given online and are individually graded.

Final Exam

The final exam is scheduled for: December 11, 2020.

Make-up exams will be given *only* in cases of extenuating circumstances. Extenuating circumstances are **unexpected and unavoidable** situations such as hospitalization or auto accident. They don't include forgetting about the date of the exam, busy work schedule, etc. You would need to provide documentation to your instructor as soon as possible after the missed assignment/assessment for consideration. Extenuating circumstances will be evaluated by your instructor on a case by case basis. It is your responsibility to contact your instructor with documentation of your situation as soon as possible, schedule a makeup exam, and submit the proper documentation to the department**.** All missed grades will be recorded as zeros.

Grading Formula

Category	Weight %
Participation (Teamwork, Discussions, Jokes, Puzzles)	15
Assignments	20
Labs	30
Term Project	20
Final Exam	15

Grade	Total Percentage
A	90.0+ %
B	80.0-89.9 %
C	70.0-79.9 %
D	60.0-69.9 %
F	< 60.0 %
Fx	Failed Due to lack of participation (can affect financial-aid status)

Incomplete Policy:
In order to receive a grade of Incomplete ("I"), a student must have completed at least 85% of the work in the course. In all cases, the instructor reserves the right to decline a student's request to receive a grade of Incomplete.

HCC Grading Scale can be found on this site under Academic Information:
http://www.hccs.edu/resources-for/current-students/student-handbook/

Course Calendar

Module	Week	Topic
01	Sep 21-26	Introduction to A.I. – Course Setup
02	Sep 21-26	Introduction to A.I. – The Big Issues
03	Sep 28-Oct 03	Games, Prelude to AI
04	Sep 28-Oct 03	Games Change Everything
05	Oct 05-10	Machine Learning – The Data
06	Oct 05-10	Machine Learning – The Pipeline
07	Oct 12-17	Deep Learning – Neural Networks
08	Oct 19-24	Deep Learning – Real Learning Good Analytics
09	Oct 26-31	Computer Vision – Image Processing
10	Nov 02-07	Computer Vision – Image Understanding
11	Nov 09-14	Natural Language Processing - Basics
12	Nov 16-20	Natural Language Processing – Speech Does It All
13	Nov 23-28	Robotics – Grand Tour
14	Nov 30-Dec 05	Robotics – Hard and Soft Issues
15	Nov 30-Dec 05	Platforms and Security - Setups
16	Nov 30-Dec 05	Platforms and Security – Cognitive Issues
17	Nov 30-Dec 05	Xxtras – Communications and Skills
Final Exam	Dec 07-11	Covers Modules 01 - 16

Syllabus Modifications

The instructor reserves the right to modify the syllabus at any time during the semester and will promptly notify students in writing, typically by e-mail, of any such changes.

Instructor's Practices and Procedures

Missed Assignments

All Assignments and Labs contain the first names of the team members who contribute, with an indication of the contribution of each team member. Students who do not contribute to an assignment or who miss any submission receive a grade of zero for the assignment. Missed exams may be made up in extraordinary cases. Assignments, Labs, Term Projects, and exams are all "assignments".

Academic Integrity

Scholastic Dishonesty will result in a referral to the Dean of Student Services. See the link below for details. Students may ask questions to other students, to me, or to anyone else. This is how we learn, and I encourage it. HOWEVER, all work must be started and completed in its entirety on your own. If it is found that students are sharing the same files,

and then making minor changes to submit the work as their own, students will receive a 0 on the assignment and be referred to the Dean of Student Services.

Click on the link to view HCC information about academic integrity (Scholastic Dishonesty and Violation of Academic Scholastic Dishonesty and Grievance): http://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-procedures/

Attendance Procedures

1. Online students may be withdrawn before the Official Day of Record if they have not logged in or shown sufficient participation. See the Online Student Handbook for more information.
2. As an Online section or On-Campus section of this course, you must make satisfactory progress in this course. Students may be withdrawn if the student misses turning in assignments (Labs, quizzes, or discussions) that total to more than 12.5% of the course work prior to the Final Exam.
3. Contact your instructor if you are having a problem.
4. If you decide to quit participating in the course before the Last Day for Administrative/Student Withdrawals, you may withdraw yourself, or ask the instructor to withdraw you, or in some cases the instructor may withdraw you without your approval if you have not attended and participated. Talk to you instructor for details.
5. After the withdrawal date deadline, the instructor is not able to withdraw you.
6. You may receive an FX as your grade due to lack of participation if you have not withdrawn yourself. If you receive an FX, you may or may not have to return the financial aid.

For complete information regarding Houston Community College's policies on attendance, please refer to the Attendance Policy under Academic Information in the HCC Student Handbook   .

Student Conduct

Two simple rules: (1) Students should be respectful to everyone in the class. (2) Students should come to class on-time, prepared, and ready to learn. These rules of simple respect apply just as well online.

Instructor's Course-Specific Information (As Needed)

WHERE DO I BEGIN?

1. **IF YOU ARE IN AN ONLINE SECTION**, make sure you complete the online orientation at: http://www.hccs.edu/online/.
   - Click on **Student Support** under HCC Online Services
   - Click on **Online Course Information** under Important Information
   - Click on the Semester link of your choice
   - Search for this course by choosing *Artificial Intelligence* or by entering the appropriate *CRN* number
   - Locate the course you have enrolled and click the *Course Information* link
2. **TO ACCESS OUR COURSE** go to http://eagleonline.hccs.edu.

- Alternatively, you may go to http://www.hccs.edu. If you don't see the **MyEagle Student Sign-in** link at the top of your screen, scroll down to *College Links* (bottom right column) to select **Student Sign-in**, and then select ***Eagle Online Canvas***.

3. **READ THE MAIN PAGE OF OUR CLASS WEBSITE** and then click on **MODULES**. Start with the first module, read each link in the module, and proceed to the second module.

4. **ALWAYS CHECK THE CLASS WEBSITE AT LEAST TWICE A WEEK.**

5. **PRINT OUT THE COURSE CALENDAR** found in this syllabus. Mark off each assignment as completed. This will help you stay on schedule.

6. **THE EAGLE ONLINE USER ID** will be your HCC User ID (sometimes referred to as the "W" number). All HCC students have a unique User ID. If you do not know your User ID, you can look it up by visiting the HCC home page.

7. **EMAIL ME VIA THE EAGLE ONLINE INBOX TOOL.** If you cannot access the Eagle Online (Canvas) Inbox tool, you may send me a message via your normal email provider to g.brown@hccs.edu, making sure to add your NAME and COURSE and CRN *in the Subject line. Emails received without this information will not be answered.*

8. **EAGLE ONLINE TECHNICAL HELP** Go to http://hccs.edu/online and click on **Technical Support** and then on **Eagle Online Technical Support**. It lists the support methods available:
   - The recommended way to get support is to complete the form under the **Student Help Form** link.
   - Technical Support number: 713-718-5275, option 3
   - IT Password Reset number: 713-718-8800, option 1

9. **POP Ups** If a pop-up is blocked, you will need to set your pop-up blocker to allow pages from our websites. More information is located in the first module of the course. Do this before beginning the course as many of the early links in the course are pop-ups!

10. The hardest part of this course is completing all the work on-time. Do not procrastinate. Work ahead! Have fun!

HCC Policies

Here's the link to the HCC Student Handbook http://www.hccs.edu/resources-for/current-students/student-handbook/   In it you will find information about the following:

- Academic Information
- Academic Support
- Attendance, Repeating Courses, and Withdrawal
- Career Planning and Job Search
- Childcare
- disAbility Support Services
- Electronic Devices
- Equal Educational Opportunity
- Financial Aid TV (FATV)
- General Student Complaints
- Grade of FX
- Incomplete Grades

- International Student Services
- Health Awareness
- Libraries/Bookstore
- Police Services & Campus Safety
- Student Life at HCC
- Student Rights and Responsibilities
- Student Services
- Testing
- Transfer Planning
- Veteran Services

EGLS³

The EGLS³ (Evaluation for Greater Learning Student Survey System) will be available for most courses near the end of the term until finals start. This brief survey will give invaluable information to your faculty about their teaching. Results are anonymous and will be available to faculty and division chairs after the end of the term. EGLS³ surveys are only available for the Fall and Spring semesters. –EGLS3 surveys are not offered during the Summer semester due to logistical constraints.
http://www.hccs.edu/resources-for/current-students/egls3-evaluate-your-professors/

Campus Carry Link

Here's the link to the HCC information about Campus Carry:
http://www.hccs.edu/departments/police/campus-carry/

HCC Email Policy

When communicating via email, HCC requires students to communicate only through the HCC email system to protect your privacy. If you have not activated your HCC student email account, you can go to HCC Eagle ID and activate it now. You may also use Canvas Inbox to communicate.

Housing and Food Assistance for Students

Any student who faces challenges securing their foods or housing and believes this may affect their performance in the course is urged to contact the Dean of Students at their college for support. Furthermore, please notify the professor if you are comfortable in doing so.
This will enable HCC to provide any resources that HCC may possess.

Office of Institutional Equity
Use the link below to access the HCC Office of Institutional Equity, Inclusion, and Engagement (http://www.hccs.edu/departments/institutional-equity/)

disAbility Services

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including long and short term conditions, mental health, chronic or temporary medical conditions), please meet with a campus Abilities Counselor as soon as possible in order to establish reasonable accommodations. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Ability Services. It is the policy and practice of

HCC to create inclusive and accessible learning environments consistent with federal and state law. For more information, please go to http://www.hccs.edu/support-services/ability-services/

Title IX

Houston Community College is committed to cultivating an environment free from inappropriate conduct of a sexual or gender-based nature including sex discrimination, sexual assault, sexual harassment, and sexual violence. Sex discrimination includes all forms of sexual and gender-based misconduct and violates an individual's fundamental rights and personal dignity. Title IX prohibits discrimination on the basis of sex-including pregnancy and parental status in educational programs and activities. If you require an accommodation due to pregnancy please contact an Abilities Services Counselor. The Director of EEO/Compliance is designated as the Title IX Coordinator and Section 504 Coordinator. All inquiries concerning HCC policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to:

David Cross
Director EEO/Compliance
Office of Institutional Equity & Diversity
3100 Main
(713) 718-8271
Houston, TX 77266-7517 or Institutional.Equity@hccs.edu
http://www.hccs.edu/departments/institutional-equity/title-ix-know-your-rights/

Office of the Dean of Students

Contact the office of the Dean of Students to seek assistance in determining the correct complaint procedure to follow or to identify the appropriate academic dean or supervisor for informal resolution of complaints.

https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-complaints/speak-with-the-dean-of-students/

Department Chair Contact Information

Fidelis Ngang: fidelis.ngang@hccs.edu (713)718-7513