

This document is subject to change. I reserve the right to adjust throughout the semester as deemed necessary.

**Environmental Note:**

**In support of our environment, I recommend not printing the syllabus except when absolutely necessary. The syllabus can be accessed from the network drive or stored on your cell phone and/or computer.**

**Introduction to Artificial Intelligence (CpSc 476-01)**

**Spring 2024**

**Instructor: Dr. Sam R. Thangiah**

**T/Tr: 11:00 a.m. – 12:15 p.m., ATS 224**

**Office: 250 ATS**

**Office Hours:**

**M/W: 10:00 a.m. – 12:00 a.m.**

**T/Tr: 2:00 - 2:30 p.m. (or by appointment)**

**E-mail: [sam.thangiah@sru.edu](mailto:sam.thangiah@sru.edu)**

**Phone: 724-738-2141**

**Student Project Meeting Times:**

**M/W: 12:00 p.m. – 1:30 p.m.**

**F: 11:00 a.m. – 12:30 p.m.**

**URL: <http://srufaculty.sru.edu/sam.thangiah>**

**Zoom for project meetings:**

<https://sru.zoom.us/j/95447703244>

Meeting ID: 954 4770 3244

Passcode: 537439

**Optional Texts:**

- Artificial Intelligence: A Guide to Intelligent Systems (2nd Ed.), Michael Negnevitsky, ISBN: 0321204662, Pearson.

**Research Papers**

Research papers on AI topics will be provided by the faculty.

**Software**

Software for AI systems will be provided by faculty.

**STORAGE LOCATION:** [\cpscstorage02.srunet.sruad.edu\java\\$\CPSC-476-01.0124](https://cpscstorage02.srunet.sruad.edu/java$/CPSC-476-01.0124) or <https://cpscjava.sru.edu/CPSC-1476-01.0124/>

**CATALOG DESCRIPTION**

A survey of artificial intelligence topics including heuristic programming, search techniques, knowledge representation, expert systems, vision and speech in automators, pattern recognition, and robotics. Prerequisite: CPSC 374 or permission of instructor. (3 credits)

**GRADING POLICY (approximate points):**

2 Examinations	200 points (100 points each)
Project/Presentation/Reports	200 points (110, 30, 60 points)
Or Final Exam	200 Points
Pop Quiz	80 points (approximate)
Assignments	40 points (approximate)

Total

720 points (approximate)

**TOPICS:**

Introduction to AI  
Reasoning – CLIPS, Expert System  
Fuzzy Based Expert Systems  
Evolutionary Computation  
Genetic Algorithms

Swarm Intelligence  
Intelligent Heuristics  
Robot Operating Systems

**COMPUTER LABS:**

Artificial Intelligence and Robotics Lab. – ATS 227 – 11 computers + Humanoid, Pepper and Furhat Robots  
ATS 129/224/230– 35 computers (can be used when there are no classes)

**EXAM DATES:**

Exam 1: Thursday Feb 22, 11:00 – 12:15 p.m.  
Exam 2: Tues, Apr 16, 11:00 – 12:15 p.m.  
Final: Tues Apr 30 10:30 – 12:30 p.m.

## General Policies and Procedures for 2023-2024

Attendance Requirements: **Attendance is compulsory. Class attendance will be taken regularly. Lack of attendance usually leads to a failing grade (missed quiz's, assignment, etc.). If you miss a class, it is your responsibility to get the material covered during your absence from a classmate. For each absence from the class, you will forfeit 10 points from the total score you earn for the class. Absence means not coming to class, coming late to class, leaving the class without the instructor's permission, to mention a few.** If you have to miss a class for legitimate reasons, you have to secure my permission for the event in advance and in addition get a letter from a staff or faculty sponsoring the event. If you are absent due to unforeseen medical circumstances, then you need to bring a letter from a medical doctor or a staff at the health center to be excused.

**Tardiness:** Student's should be in class a few minutes before lectures start. Students late in coming to class will be counted as absent. Each absence will lead to a forfeit of 10 points from your total score for the semester.

**Student Conduct and Class Etiquette:** Decency and proper etiquette will be observed in class during the lectures and labs. Do not disturb or distract any other students or faculty during the lectures and lab. This includes talking to other students in class. Disregarding proper etiquette will result in removal from the class in addition to disciplinary actions (<http://www.sru.edu/offices/student-conduct/code-of-conduct>.) **The primary reason that you are attending this class is to acquire knowledge, everything else is secondary.**

When addressing faculty, either by e-mail or other forms of communication, address with the prefix of either Prof. or Dr. followed by their first or last name. Do not address them by their first name unless they have indicated to you that you may. Do not address them as "Yo", "Hey", "Dude", "Hello", "Bro" or any other terms as it is impolite and socially not acceptable.

**Assignments/Notes/Data Files from Faculty:** Assignments/Notes/Data Files from faculty for each of the classes can be accessed from the cpscstorage02 drive of the SRU campus network. If the class that you are taking is CpSc 100, section 5, then it will be located in /sam.thangiah/cpsc100-5.

**Student Folders:** Student folders will automatically be created for you in cpscstorage02 drive. The folders will be labeled as \\cpstorage02\ class>-<section>\<student login>. The student folder should be used for storing all projects, assignments and reports starting from the first week of classes. Individual folders named Projects, Assignments, and Reports should be created to store the respective files. Students not storing the projects, assignments and reports in the folder will forfeit 25 points from the final grade.

In the first week of classes you need to check to ensure that you have a student folder for the class. If you do not have one, you need to send me an e-mail with your name, user id and class and section and request for a folder to be created. If you do not have a folder and do not request for one in the first week of classes, you will lose 25 points when the folder is checked for projects, **assignments** and reports. **It is your responsibility to ensure that you have a student folder for the class.**

**Assignments/Reports/Programs from Students:** Assignments/Reports/Programs are to be submitted on time at the beginning of the class. Late assignments will receive 0 points. If the class is to start at 1:00 p.m., the assignments must be on the instructor's table before 1:00 p.m. If submitted at or after 1:00 p.m., the assignment will receive 0 points (Synchronize your clock/watch with the U.S. standard time at <http://nist.time.gov>). No excuses, however creative will be accepted. Softcopies of the assignment/reports are to be submitted in \\cpstorage02\java\$\<class>-<section>\<student login> folder. If you are in the CpSc 110, Section 5 class, it should be placed in \\ cpstorage02\java\$\cpsc110-5\xml5432 where xml5432 is the student login. The simplest way to do this is to create a **Map Drive to \\ cpstorage02\java\$** using the My Network Places/Map Network Drive icon on the desktop. Assignments, reports and programs should be placed in folders named Assignments, Reports and Programs respectively. All work submitted for grade should reside in the drive until the final grade is submitted.

**Text Books:** It is the responsibility of the student to read the textbook that is required for the class. One of the

primary reasons that students get lower grades is because they do not read the textbook. The exams and quizzes for the class consist of material from the lecture and from the textbook.

**Academic Integrity:** Absolutely no instances of academic dishonesty will be tolerated. Plagiarism of another's work or ideas taken from print or electronic media, whether in a research paper or in a computer program, will result in an "F" in the course. Similarly, cheating on an assignment (i.e. copying someone else's work or having someone else do part or entire assignment, doing it as a group), quiz, test, or exam will result in a grade of "F." If one student did the work and a second student copied it, both the students will fail the course.

Academic dishonesty may take many forms. Examples include, but are not limited to, the following:

- Buying, selling, or trading papers, projects, or other assignments.
- Using or attempting to use any unauthorized book, notes, or assistance (for example, copying another student's test or homework).
- Plagiarizing and/or submitting the work of another as your own.
- Completing class work for another person.
- Fabricating information, research results, or citations.
- Facilitating dishonest acts of others pertaining to academic work.
- Conducting research with human subjects without IRB approval.
- Conducting research with animals without IACUC approval.
- Possessing or sharing unauthorized examinations.
- Submitting, without instructor permission, work previously used.
- Tampering with the academic work of another person.
- Recording an instructor's teaching content and/or distributing a professor's teaching content without permission.
- Ghost-taking an exam in place of a student or having any person take an exam in your place.
- Any attempt to falsify an assigned grade on an examination, report, or program or in a grade book, document, or other record.
- Any attempted, or actual computer program theft, illegal use of software; illegal downloading or streaming of copyrighted media, or inappropriate use of the Internet; such as, but not limited to, illegal or unauthorized transmission; or improper access to any computer system or account.
- Any attempted, or actual, collusion willfully giving or receiving unauthorized or unacknowledged assistance on any assignment or examination (all parties are considered responsible).
- Forging a faculty member's or administrator's signature on any document.
- Copying and pasting digital media (including but not limited to, email correspondence, text, images, or other media from online sources) without proper citation, the copyright owner's permission to use the digital media, or evidence of having performed a favorable fair use analysis.
- Copying and pasting significant portions of digital media with or without citation.
- Submitting work generated by artificial intelligence as your own.

In addition, if you did an assignment/exam and do not know how to replicate it, it will be considered as cheating/plagiarism. Faculty have additional access to the electronic reporting system to report academic dishonesty for students and these reports are permanent. Furthermore, any academic dishonesty can result in probation/suspension/expulsion from the University. Check the following document on the university policy on academic dishonesty (<https://catalog.sru.edu/academic-policies/academic-integrity/>)

**Use of Scheduled PC Lab Time:** Classes scheduled for the PC Lab are to be used for working on assignments for the course in which you are enrolled. They are not to be used for sending and receiving e-mail or using messenger, or for "surfing" the Internet. Any student who violates this policy will be asked to leave the PC Lab, and may find him/herself failing the course in which he/she is enrolled. **You are not to leave the lab, even if you complete the required exercises during the class period. Leaving the lab, before the class period is complete is considered as an absence. If students do not attend the lab, for classes that meet once a week, it will also be considered as an absence. Use of the computer in the lab, during the class period to do anything that is not related to class will result in the loss of 10 points for each occurrence.**

**Incomplete Grades:** An “I” may be granted when extenuating circumstances prevent completion of course requirements within the course’s time period, and with the mutual understanding that the final grade will be one letter grade less than the grade the student would have received if the work had been completed on time. An “I” is converted to an “F” if it is still unresolved by the end of the succeeding semester. An “I” grade will be awarded in extreme rare cases.

**Cell Phones/MP3 Players/Head Phones/Electronic Devices:** All Cell phones, mp3 players, watch alarms, head phones, Ipods (any devices with earphones), watches synched to phones, and electronic devices should be **turned off** and placed away from audio/visual/physical range during the lectures and lab sessions. Contact me before class if the phone needs to be active to receive emergency calls. **Use of cell phones or any electronic devices in class will result in the loss of 10 points for each usage. A cell phone within visual range to see incoming calls or texts will result in loss of 10 points for each occurrence.** In short, put the cell phone away and forget about its existence for the length of the class period.

**Withdrawal from Class:** A student can withdraw during the first ten weeks of class with a “W”. The “W” is a normal withdrawal that will not affect the students QPA. After the first ten weeks, no withdrawals are allowed and the student will receive a letter grade. That is, after the 10th week, you cannot drop out of the class.

**Extra Credit:** There will be no extra credit assignments/projects/programs assigned at any point in the semester.

**Semester/Final Exams:** There will be no rescheduling of semester, mid-term and final exams. Students are expected to take the exams respective to the scheduled times.

#### **Demonstration of Computer Programs in class**

When computer programs are demonstrated in class, they are running on a university system with standard settings for the Windows operating system. If you are unable to run the computer programs demonstrated in class on your personal computers, I will not be able to help you with the issues as each personal computer system can have its own unique settings. I can only show you how the programs being demonstrated run on a university system, namely one that is in class or lab. associated with the computer science department.

**E-mail:** All students are expected to have an e-mail address. E-mails should be checked on a regular basis for notes/assignments from the faculty that might be due in the succeeding class period. Students can access their e-mail from any computer using a browser and the address <http://sruwebaccess.sru.edu>. When sending an e-mail to me, the following information should be at the top of the e-mail. **Any e-mail that does not have the following information will be discarded.**

**First Name Last Name**  
**User Id**  
**CpSc <class number>>- <<class section>>**

<b>Grading Scale:</b>	A	90 – 100%
	B	80 – 89.99%
	C	70 – 79.99%
	D	60 – 69.99%
	F	0 – 59.99%

**I will try and respond to e-mails within 24 to 48 hours. All e-mail response will be during work hours M-F 8:30 – 4:30 p.m.**

## Projects in Artificial Intelligence

- Students will be placed in groups of two or three and will be given projects that would require them to work as a group in accomplishing the task. Group project means you will work on your sub-part of the code, as will each of the other individuals in the group, towards getting the entire project to work. The faculty reserves the right to split the project into sub-parts and have students work on the separate sub-parts. **If progress is not being made in the project by any individual/individuals in the group, the faculty reserves the right to split the group up in any manner or form including the assignment of new projects to an individual or individuals in the group.**
- All projects should be in the Github project account, <https://github.com>. **Each student will have created a Github account with your SRU userid (this needs to be done before the second class of the semester).** The students e-mail address has to be the SRU e-mail address for the Github account. For example, if your e-mail address is [abc1234@sru.edu](mailto:abc1234@sru.edu) the Github userid should be abc1234). The faculty will create a Project for each of the groups. All code should be updated to this account. This will allow the faculty to track the progress being made by each student with respect to the project.
- Every Tuesday before the start of class the Github account should be updated with all of the recent code by every individual in the group.
- For semester long projects, every Tuesday before the start of the class, or before the weekly faculty meeting if it is earlier than Tuesday, a report on the progress of the project should be submitted in softcopy format. The softcopy should be placed in the cpscstorage02 drive. Late softcopy reports will result in a 0 for that report. The reports should remain in the cpscstorage02 for the entire semester.
- The weekly meetings will be for students doing the semester long project. If the weekly meeting is on a day other than a Tuesday, a second individual and group report should be submitted on what was done from Tuesday till the day of the meeting.
- Each individual will have an individual folder in cpscstorage02. Each group will have a group folder in cpscstorage02 with all students in a group having access to the group folder.
- Each individual folder should consist of a Report, Assignment and other folders as needed. Each group folder should consist of a Report, Final and other folders as needed. The **group Report folder** is for **weekly group reports** and the Final folder is for submission of the final project including the code and the documents. The group report should be what all the individuals of the group have achieved as a group for the week.
- The **individual Report folder** is for weekly individual reports on the contributions the student has made with respect to the group project for that week.
- All reports, weekly and group, should be of the format Week-<Week #>-<mm/dd/yyyy of the report>
- Each report should have the name of the participant(s), the name of the project, the date that it is being handed in and the details of the project. Each report should show progress towards the completion of the project. A softcopy of the form that is to be used for submitting the report is available in the cpscstorage02 drive and is also attached to this syllabus.
- For semester long project, every week, during times designated within the office hours, each group will meet with the faculty for 15 to 20 minutes and explain what has been accomplished. The faculty will discuss with each student the student accomplishments for the week and progress towards the completion of the project. The 5 points for the report will be based on the meeting attendance and the report submitted on Tuesdays.
- For semester long project, missing a meeting or failing to hand in a report on a Tuesday will result in 0 points towards the report for that week. **If you miss more than one meeting without an acceptable excuse, you will be dropped from the group and will get a 0 towards the semester project. If an entire group misses more than one meeting without an acceptable excuse, your weekly meeting time will be cancelled for the entire semester. You will need to contact the faculty to be rescheduled for weekly meetings.**
- The faculty will check and monitor the Github for contributions being made by each student in a group. **All contributions for the week should be updated to Github 12 hours before the weekly meeting to give the faculty an opportunity to check what has been done.** Each student should be individually ready to answer questions with respect to the project and the code.
- On the Monday of the twelfth week of classes 99% of required code should have been completed.

- On the Monday of the thirteenth week of classes 99% of the manuals and presentation should have been complete and before 5:00 p.m. on Monday all code, document and presentations, in PowerPoint slide format, should have been submitted to the Final folder in the group folders.
- On the Tuesday and Thursday of the fourteenth week of classes, presentations will be made to the class using PowerPoint.
- Before the end of the fourteenth week of classes, I will provide a grading for the final project and any corrections that need to be done for the final project. The group projects should have all the corrections made and submitted to Github and cpscstorage02 before the final exam day.

The reports are due starting from the second week of classes

**CpSc 476: Introduction to Artificial Intelligence  
Dr. Sam R. Thangiah Spring 2024**

**Revision Date: January 23, 2024**

**Weekly Report**

**(The weekly report should be typed. Handwritten reports will not be accepted)**

**Date of Report:**

**Title of Project:**

**Group Number:**

**1 - Your Name:**

**2 - Partner's Name:**

**3 - Partner's Name:**

**4 - Partner's Name:**

**5 - Partner's Name:**

**6 - Partner's Name:**

**Percent Work Contributed (the total should not exceed 100%)**

<b>Group Member</b>	<b>Percent of Work done</b>
<b>1 - Self</b>	
<b>2</b>	
<b>3</b>	
<b>4</b>	
<b>5</b>	

**Number of group meetings for the week:**

**Number of total hours spent on group meetings:**

**For Official Use Only:**

**Total points Possible: 5**

**Total Points Received: \_\_\_\_\_**

**Attended meeting with Faculty:**

**“All the information that has been reported is true to the best of my knowledge. I attest to the truthfulness of the report by signing below“**

**Signature: \_\_\_\_\_**



**Goal from previous meeting:**

**Goals achieved:**

**Goals not achieved:**

**Goal for next meeting:**

**Check if the following has been accomplished:**

- Code is documented
- Code has been updated to GitHub

**CpSc 476: Introduction to Artificial Intelligence**  
**Instructor: Dr. Sam R. Thangiah**

**Final Project Evaluation (110 points):**

<b>Completion of program</b>	<b>80 points:</b>	
Code Executes Completely (40)		_____
Code Reusability (10)		_____
Code Testing/Logging (10)		_____
Check for Exceptions (10)		_____
User Interface (10)		_____
If incomplete, explain all details of it		
<b>Documentation</b>	<b>30 points</b>	
Documentation in Code (10)		_____
Technical Manual (20)		_____
User Manual (10)		_____
Evaluation Manual (5)		_____
<b>Bonus Points</b>		_____
<b>Total</b>	<b>110 points</b>	_____

**CpSc 476: Introduction to Artificial Intelligence**

**Instructor: Dr. Sam R. Thangiah**

**Student Name:**

**Percent of Work Completed (PWC): \_\_\_\_\_%**

**Final Project Presentation (30 points):**

**Availability of slides before presentation (2) \_\_\_\_\_**

**Structure (8) \_\_\_\_\_**

**(title, intro. motivation, body,  
summary, future work \_\_\_\_\_**

**Delivery (5) \_\_\_\_\_**

**Coverage and Knowledge of Content (5) \_\_\_\_\_**

**Quality of Content (5) \_\_\_\_\_**

**Engagement with Audience (5) \_\_\_\_\_**

**Bonus Points \_\_\_\_\_**

**Total 30 points \* PWC \_\_\_\_\_**

# Computer Science Department Course Competency Plan

COURSE: CpSc 476 - Introduction to Artificial Intelligence

## Catalog Description

A survey of artificial intelligence topics including heuristic programming, search techniques, knowledge representation, expert systems, vision and speech in automators, pattern recognition, and robotics.

Prerequisite: CPSC 374 or permission of instructor. (3 credits)

## Course Outcomes

This course and its outcomes support the Computing Learning Outcomes of **Problem Solving and Critical Thinking (PS&CT)**, and **Ethical and Professional Responsibilities (E&PR)**. These Computing Learning Outcomes are tied directly to the University Wide Outcomes of **Critical Thinking and Problem Solving**, and **Values and Ethics**.

Course Objectives
1. Describe what artificial intelligence (AI) means and how machines can be made to process information intelligently.
2. Identify the different fields that comprise AI, namely search techniques, game playing, automated reasoning, problem solving, natural language processing, expert systems, knowledge based systems, pattern recognition, computer vision, robotics, machine learning and heuristics.
3. Write computer programs and/or use shell programs that solve problems intelligently.
4. Write programs in artificial intelligent methods.
5. Write programs to implement AI in areas such as: robotic hardware, visual processing, knowledge representation, intelligent search techniques and heuristics.

**Copyright Statement** - Students shall adhere to the laws governing the use of copyrighted materials. They must ensure that their activities comply with fair use and in no way infringe on the copyright or other proprietary rights of others. Additional information regarding copyright can be found here <http://www.copyright.gov/> and information about fair use can be found here <http://www.copyright.gov/help/faq/faq-fairuse.html>.

**Title IX** : Slippery Rock University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to comply with the requirements of Title IX of the Education Amendments of 1972 and the University's commitment to offering supportive measures in accordance with the new regulations issued under Title IX, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred to the person designated in the University protection of minors policy. Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at: <https://www.sru.edu/offices/diversity-and-equal-opportunity/sexual-misconduct-and-victim-resources>.

**Non-discrimination:** Slippery Rock University of Pennsylvania does not discriminate on the basis of race, color, sex, sexual orientation, gender identity, gender expression, national origin, religion, age, disability, or veteran status in its programs or activities in accordance with Title IX of the Educational Amendments of 1972, the Americans with Disabilities Act of 1990, Section 504 of the Rehabilitation Act of 1973, Title VII of the Civil Rights Act of 1964, and other applicable statutes and University policies. [www.sru.edu/offices/diversity-and-equal-opportunity/notice-of-non-discrimination](http://www.sru.edu/offices/diversity-and-equal-opportunity/notice-of-non-discrimination)

### **Correct Pronouns, Names, and Inclusive**

Correct Pronouns, Names, and Inclusion: Language is gender-inclusive and non-sexist when we use words that affirm and respect. I hope to create a space where students have the opportunity to bring all aspects of themselves into the classroom. I support people of all gender expressions and gender identities, and I encourage students to use the name and set of pronouns which best reflect who they are. In this spirit, I expect all students to use the correct name and pronouns of their classmates. I will respect and use the language you use to refer to yourself, and I will encourage other members of our classroom community to do the same. Please inform me if my documentation reflects a name or set of pronouns different from what you use. I welcome and will respect if at any point you wish to update your name or pronouns with me and/or with the class. If you have any questions or concerns, please contact me after class, by email, or during office hours.