



CIS/HTI 345 – Using Raspberry Pi to Learn Python (3 credits)

Jan. 2 – Jan. 19, 8:00-11:15 a.m.

Location: A210 (and lab as needed)

Note: class is scheduled to meet the first Saturday

Instructor:	Tim Krause, PhD	Office:	B246, Science Building
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Office Hours:	By Appointment	Email:	tkrause@uwsp.edu

Course Description

Setup and configuration of a Raspberry Pi; Introduction to the Python programming language.

To be successful in this course requires a basic understanding of at least one other object-oriented programming language. CNMT 110 will give you enough experience as background for this course.

Objectives

- Understand when and why it might be appropriate to use Python
- Develop the ability to critically identify, select and use Python to solve problems,
- Demonstrate an understanding, through application, of types and operations, statements, syntax, functions and advanced topics (as time permits)
- Continue developing the ability to trouble-shoot and debug code written by oneself and others
- Continue developing the skill of presenting technical solutions, orally and in writing

Text and Materials

Optional Text

Lutz, Mark. *Learning Python*. 4th Ed. O'Reilly. 2013. ISN: 978-1449355739. (Estimated purchase prices: New: \$61.67; Rent: \$43.16; E-book: \$35.99)

CNMT does have a small number of Raspberry Pi's that are available for checkout. You are not absolutely required to purchase a Raspberry Pi for this course, though having one will facilitate your understanding of how to setup and configure a Raspberry Pi. More information is available here:

<https://www.raspberrypi.org/>

Make sure you understand everything that you will need to get your Pi up and running. We will discuss in class what hardware the department is able to make available for the duration of this course (e.g.: monitors, keyboards and other hardware)

You are also required to have some method for saving and bringing assignments to class (e.g. Flash Drive, Dropbox, Google Drive).

Assignments

Assignments will be announced in class and posted on D2L. If you miss class, it is your responsibility to check D2L for any homework assignments and supporting material which may have been given out during class.



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All assignments will be turned into D2L. For each assignment, you will write a 1-2 paragraph retrospective, save it as a separate **Word** document and also turn it into D2L. Your retrospective should: describe what worked well, what didn't work so well, and what you plan to do differently next time. Turn in any peer review sheets during class on the due date. Missing or incomplete design rationales or peer reviews can **each** result in losing $\frac{1}{2}$ letter grade on your final grade.

In-class assignments may not be made up, or turned in after the end of class.

I recommend that you start working on assignments as soon as possible after they have been announced. These projects almost always take longer than originally anticipated; starting early greatly increases your odds of completing the project to your satisfaction. Please call, email or see the instructor as soon as possible, and **before the due date**, with any questions or concerns about an assignment.

Points for Assignments

Miscellaneous Labs*	200	Final Project	400
Quizzes (Approx. 4)	200	Attendance and Participation	100
Final Presentation	100		
		Total	1,000

* Miscellaneous points will be rewarded based on in-class labs and exercises.

Due Dates & Late Assignments

Unless otherwise noted by the instructor, assignments are due no later than the **beginning of class** on the due date. Grades for late assignments will be reduced by one letter grade per weekday. Assignments may only be made up if the absence was due to documented illness, approved university activity or family emergency.

If you miss class or an assignment due to an approved university activity, illness or family emergency on the day an assignment is due, it is your responsibility to contact the instructor **before the start of class that day** in order to make alternative arrangements.

Attendance

This class assumes perfect attendance. In the event you need to miss a class, please consult with classmates regarding material you may have missed.

Winterim

Winterim is a fast-paced, immersive and fun experience because we have the opportunity to focus exclusively on one area for two weeks. However, Winterim also comes with some **risk that you must be aware of**: with only 13 days to complete a three credit course, it becomes difficult—if not impossible—if you fall behind in this course. Make every effort to attend class and complete projects, quizzes and other assignments in a timely fashion.



Grading Scale

Final grades will be determined according to the following scale:

		A	100 – 95%	A-	94 – 93%
B+	92 – 91%	B	90 – 85%	B-	84 – 83%
C+	82 – 81%	C	80 – 75%	C-	74 – 73%
D+	72 – 71%	D	70 – 65%	F	< 64%

I reserve the right to lower the grading scale (e.g. it may require less than 95% to earn an A).

Academic Standards

The University of Wisconsin – Stevens Point is an academic community of individuals committed to the pursuit of learning, the acquisition of knowledge, and the education of all who seek it. This course expects that all work turned in for a grade is your own, or that of your group. A description of your rights and responsibilities as a member of the UWSP community can be found at:

<http://www.uwsp.edu/admin/stuaffairs/rightsandresponsibilities.aspx>

Student Academic Standards and Disciplinary Procedures (UWS/UWSP Chapter 14) is available at: <http://www.uwsp.edu/admin/stuaffairs/rights/rightsChap14.pdf>

Cell Phone, IM and Recording Devices

Please turn off cell phones before entering the classroom. Cell phones may not be used in the classroom without prior permission of the instructor. Instant messaging, including *Facebook and social media sites*, should also be turned off, unless you are communicating with a group member working remotely. If you would like to record (video or audio) any aspect of this course, please seek prior permission from the instructor.



Tentative Topic List and Course Schedule

Date	Topic	Due
Jan. 2	Course Introduction, Installing Python Why Python? Why Raspberry Pi? IDEs	
Jan. 3	Syntax Rules, Object Types	Lab 1
Jan. 4	Numeric Types, Strings, Troubleshooting, Exceptions	Quiz 1*
Jan. 5	Lists and Dictionaries; Final Project Proposals	
Jan. 6	Lab Day	
Jan. 8	Tuples Files and the Rest	Lab 2
Jan. 9	IF statements and Loop Structures	Quiz 2 Final Project Proposal
Jan. 10	Working with Files and External Data	Lab 3
Jan. 11	Scope, Iteration and Advanced Topics	Quiz 3
Jan. 12	Lab Day	
Jan. 15	Advanced Topics	Lab 4
Jan. 16	Python, R and Data Analytics	Quiz 4
Jan. 17	Clustering Raspberry Pis	
Jan. 18	Lab Day	Final Project
Jan. 19	Final Presentations	

* All Quizzes are on D2L unless otherwise announced.

Final Exam: Friday, Jan. 19th. In place of a final exam you (and a partner, if you choose) will present your final project to the rest of the class. **If you are taking the course online, this is the one class where you have to participate during the time the course is offered. We'll agree on Google Hangout or Skype so that everyone is involved.**

Tips for Taking this Course Online

Online courses are just as rigorous as face-to-face courses. If you are taking the course online, based on my past experiences, here are some things you'll want to keep in mind:

1. If something seems missing or late from D2L, please don't hesitate to ask;
2. Set aside time in your schedule to work on this course; if you don't, you'll get behind;
3. Communicate that schedule with your family and other important members of your life;
4. Be extremely careful about your other obligations; working 40 hours a week and taking a Winterim course has never gone well (even 20 hours is difficult);
5. Start early and ask questions often; I'm typically online for a good portion of the day, but don't expect a response from me after around 9:00 p.m. (I may respond; just don't expect it);

