# The University of Iowa
# School of Library and Information Sciences
# Fall 2017

| Course | SLIS 5020: Computing Foundations |
|---|---|
| Course Schedule | Mondays 4:30-7:15 |
| On Campus | 3092 Main Library |
| EXE Section | https://uiowa.zoom.us/j/8603381342 |
| Instructor | Dr. Lindsay Mattock |
| Office Location | 3072 Main Library |
| E-mail | lindsay-mattock@uiowa.edu |
| Office Hours | by appointment |

## Course Overview

In this course, we will begin to break into the "black box" of the computer. The LIS field demands professionals who are competent in computing and comfortable working with digital platforms and tools. Computing is more than simply sending email, building webpages, and creating documents. In this course, we will utilize the Raspberry Pi to fully explore hardware, software, and the tool that we call the computer. As a survey course, we cannot possibly address every technology that you will encounter in your practice. Instead, the goal of this course is to provide you with an opportunity to explore various aspects of computing and to critically engage with hardware and software.

To be successful in this course you must: tinker, play, build, make, tweak, experiment, hack, and break things. You will push your boundaries and the boundaries of the technology, ask many questions of yourself and your peers, be confused and/or frustrated and/or lost, dig yourself out of those traps and think deeply about the digital tools that you will engage with during your time here at SLIS, in your professional posts, and in all other aspects of your life. This course is not about gaining mastery of particular tools, but rather building the skills and experience that will allow you to be comfortable and confident engaging with and evaluating new and familiar technologies.

## Required Technology

Each student must purchase a Raspberry Pi by the third week of class. The Raspberry Pi is a credit card sized computer that will allow us to build servers and webpages, experiment with programming in Python, and work with content management systems like WordPress. If none of these terms is familiar, do not despair - the Raspberry Pi is a blank slate from which we will all work together to complete the projects as a group.

You will each need to purchase a Raspberry Pi and a few essential pieces of hardware to make it functional. You'll want to have your Pi in hand for our third class meeting - September 11th. You may elect to purchase the individual components listed below or find a starter kit (like this one https://thepihut.com/collections/raspberry-pi-kits-and-bundles/products/raspberry-pi-3-starter-kit) that contains the elements you need:

1. Raspberry Pi Model 3

2. 16G or larger Class 10 Micro SD Card (preferably with NOOBS and Raspbian installed)

3. Power supply

4. HDMI cable (or HDMI output to an input appropriate for your monitor)

5. Raspberry Pi 3 heatsink kit (recommended)

6. Raspberry Pi 3 case (optional)

In addition to these components, you'll need access to a monitor with a HDMI port (or the appropriate adaptor) and a USB keyboard and mouse. If you are taking the on-campus version of the course, the monitor, HDMI cable, keyboard, and mouse will be available for you. I suggest starting with an online retailer such as Allied Electronics (alliedelec.com), SparkFun (sparkfun.com), or Amazon.

## Required Textbooks

There are no required texts for this course.  The required readings and class projects for each week are available electronically on the course ICON site.

## Semester at a Glance

| | | |
|---|---|---|
| Week 1 | August 21 | Introduction to the Course |
| Week 2 | August 28 | Binary, Bits, and Basics |
| | September 4 | Labor Day |
| Week 3 | September 11 | Introduction to Raspberry Pi |
| Week 4 | September 18 | HTML/CSS |
| Week 5 | September 25 | HTML/CSS |
| Week 6 | October 2 | XML/XSLT |
| Week 7 | October 9 | XML/XSLT |
| Week 8 | October 16 | Python |
| Week 9 | October 23 | Python |
| Week 10 | October 30 | LAMP |
| Week 11 | November 6 | LAMP |
| Week 12 | November 13 | LAMP |
| | November 20 | Thanksgiving |
| Week 13 | November 27 | WordPress |
| Week 14 | December 4 | WordPress |

# Course Work and Final Grades

## Course Work at a Glance

| Assignment | Due Date |
|---|---|
| Weekly Check-In | Weekly, throughout term |
| Lab Notebook 1: Binary, Bits, & Basics | September 4 |
| Lab Notebook 2: Intro to Raspberry Pi | September 18 |
| Lab Notebook 3: HTML/CSS | October 2 |
| Lab Notebook 4: XML/XSLT | October 16 |
| Lab Notebook 5: Python | October 30 |
| Lab Notebook 6: LAMP | November 27 |
| Lab Notebook 7: WordPress | December 11 |
| Weekly Attendance | Throughout term |

## 1. Weekly Check-In
### Completed in class each Monday

During the last 15 minutes of the class session each week you will complete a short open book, open neighbor, quiz covering the major concepts introduced in the assigned reading and projects, along with two reflective questions (What was your take-away from today's class? and What was the muddiest/most difficult/confusing point?). This assignment will serve as a check-point so that I can ensure that everyone is clear on the major concepts introduced in class. This is also an opportunity for you to review and reflect on the week, provide feedback, and continue the conversation with your classmates.

Each check-in will be graded as pass or fail. To receiving a passing mark, you must make an attempt to answer each of the questions to the best of your ability.  You will still receive a passing mark for an incorrect answer, as long as you make an attempt to answer the question in your own words. "I don't know" or "I didn't understand" are NOT acceptable answers and will be counted as incomplete.

| Pass | Fail |
|---|---|
| All of the questions have been answered completely with an attempt to define concepts in your own words. The check-in has been submitted by the posted deadline. | The assignment is incomplete or has not been completed by the required deadline. |

At the end of the term your passing marks will be assigned to a grade on the following scale:

| Letter Grade | Number of Passing Check-Ins |
|---|---|
| A | 14 |
| B | 12 |
| C | 11 |
| D | 9 |
| F | $< 9$ |

## 2. Lab Notebooks
### Due Mondays, as scheduled, by 4:30 pm

Throughout the course of the term, we will be working on a number of projects with the Raspberry Pi. At the beginning of each project, you will be provided with a set of instructions that will guide you through the successful completion of the project. Your lab notebook will document your experience completing the projects including your questions and observations and responses to the discussion questions included the project instructions. Each notebook will conclude with a short reflection (1000 word minimum) summarizing what you have learned and how you learned during the process of completing the project. The reflection should provide an analysis of the experience drawing upon the course topics, themes, and readings. Someone

reading your reflection should have a sense of why this project was significant to your learning, how your understanding of computing has changed (or not), and how the project has impacted your understanding of technology in your LIS practice.

Your notebook should be submitted as a single document containing the responses to the discussion questions, your observations and questions, and your project reflection. Each notebook must be submitted as a .pdf to the appropriate assignment link on the course ICON site. Your submission must also include your name and the title of the project on the first page.

Your work will be evaluated according to the following rubric:

| Requirement | Percentage | Letter Grade | | |
|---|---|---|---|---|
| | | **A** | **B** | **C** |
| Discussion Questions & Observations | 40% | The lab notebook includes thorough responses to each of the required discussion questions. Your responses address the required reading and reflect your observations and questions throughout the project. You have made an attempt to explain the project concepts in your own words. | The lab notebook includes thorough answers to each of the discussion questions listed in the project documentation. You have made an attempt to explain the concepts introduced in the project in your own words. | The lab notebook fails to provide detailed responses to the discussion questions from the project documentation. Responses are incomplete or simply reiterate definitions from the texts and fail to articulate the concepts in your own words. |
| Reflection & Analysis | 50% | The reflection provides an analysis of your experience, clearly describing what you learned by completing the project and how you learned. The reflection is further supported by observations from | The reflection summarizes your experience completing the assignment and provides some analysis of the experience by articulating what you have learned. | The reflection provides only a summary of the experience and does not engage with what was learned or how learning occurred through the process. |

| | | class discussion, assigned readings, or experiences in the LIS field. This section of the lab notebook demonstrates a critical engagement with the technology, asking deeper questions about the nature of the project and the significance to the LIS field. | | |
|---|---|---|---|---|
| Clarity | 10% | The lab notebook demonstrates evidence of proofreading and proper use of grammar and punctuation. Any citations are properly formatted according to your preferred citation style. The notebook is well organized and easy to read. | The lab notebook and citations contain a few minor proofing errors. | The lab notebook contains significant errors in grammar, punctuation, and citation that effect the clarity of the document. |

## 3. Weekly Attendance

Each weekly class session will be dedicated to the completion of a project using your Raspberry Pi computer.  While you will be graded individually on your lab notebooks, we will work together as a class to support each other through each project. As such, regular and punctual attendance in class is expected. Your attendance will be recorded each week and a mark will be assessed at the end of the term according to the following rubric:

| A | B | C |
|---|---|---|
| You have attended all of the required class sessions; have arrived on-time and participated in the weekly session until dismissed | You have missed no more than 2 of the required class sessions; or have arrived late/left early a few times during the term | You have missed more than 3 of the required class sessions; and/or have frequently arrived late or left class sessions early |

## Class Policies

### Grading Scale

| | | | |
|---|---|---|---|
| A | 4.0 | C+ | 2.33 |
| A- | 3.67 | C | 2.00 |
| B+ | 3.33 | C- | 1.67 |
| B | 3.00 | D | 1.00 |
| B- | 2.67 | F | 0 |

### Final Grades

At the end of the term your marks for each assignment will be averaged together to determine your final grade according to the grading scale, above. Please note that a B- does not count towards your degree progression and the course will have to be retaken (see "Academic Progress" in the *SLIS Student Handbook* https://slis.grad.uiowa.edu/current-students).

### Office Hours

Due to the differences in everyone's work and class schedules, it is difficult to agree upon one particular time that suits everyone's needs. Therefore, formal office hours will not be scheduled. The course discussion board will serve as a forum for general questions about the course, the projects, and assignments over the course of the term. Otherwise, if you would like to schedule

an appointment, please email me <lindsay-mattock@uiowa.edu> or speak with me after class to arrange a time and date.

## Assignment Deadlines

All assignments are due at the date and time listed in the individual assignment descriptions. <u>Late assignments will not be accepted</u>. This policy protects both your time and mine. Timely submission allows me to fairly evaluate everyone work. It also ensures that you will remain on track to complete all of your work by the end of the term. I will make exceptions for extenuating circumstances, so please reach out to me if you believe that you cannot meet an assignment deadline. See the *Extenuating Circumstances and Incomplete Grades*.

## Extenuating Circumstances and Incomplete Grades

Life happens – I realize that all of you are balancing other courses along with, work, families, pets, etc., etc., etc., while completing your degree. While I believe that you must attend class each week to get the most out of this course, I understand that extenuating circumstances (illness, bereavement, etc.) may interfere with your ability to participate fully in the course. It is your responsibility to contact me as soon as possible if such a circumstance will prevent you from attending a class session or completing the coursework according to the set schedule. I will then work with you to determine the best path forward for your particular situation. Incomplete grades will only be granted under these circumstances.

## Academic Integrity

All students are expected to adhere to the standards of academic honesty. Citation is one of the key competencies of information literate individuals and as such it is crucial for LIS professionals to learn the standards of and practice proper attribution. It is your responsibility to ensure that you are following these standards. Any student engaged in plagiarism, cheating, or other acts of academic dishonesty, will be subject to disciplinary action.

The *Chicago Manual of Style 16th Edition* stresses the importance of providing proper attribution when reusing the materials of others, arguing that this practice "not only bolsters the claim of fair use but also helps avoid the accusation of plagiarism."[1]

Plagiarism is a serious offence that includes:

- stealing or passing off the ideas or words of another as one's own
- using another's work without crediting the source
- committing literary theft
- presenting as new and original a product or idea derived from an already existing source[2]

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[1] *The Chicago Manual of Style, 16th Edition* (Chicago: The University of Chicago Press, 2010): 190.

Plagiarism can be avoided by following the guidelines for proper citation and paraphrasing. Sections 13.1-13.6 of the *Chicago Manual of Style 16th Edition* <chicagomanualofstyle.org/16/ch13/ch13_toc.html> may be referenced for guidance. The University Writing Center <writingcenter.uiowa.edu> is another on-campus resource that is available to all students enrolled in course at the University.

Acts of plagiarism will be evaluated by the professor on a case-by-case basis and will be reported to the department.  No credit will be given for plagiarized assignments. Minor transgressions will be documented in the student's departmental file. If the case is deemed to be sufficiently egregious, the offence will be reported to the Graduate College and may result in expulsion from the program. Please review the policies in the *School of Library and Information Science Student Handbook*<slis.grad.uiowa.edu/current-students> and the *Graduate College Rules and Regulations* <grad.uiowa.edu/manual-part-1-section-iv-academic-standing-probation-and-dismissal>.

## Students with Disabilities

Many students require particular accommodations in the classroom. I am happy to work with you to ensure that you have the best learning experience possible. If you are or may be requesting an accommodation, please speak with me privately and contact Student Disability Services, 3015 Burge Hall, 319-335-1462/319-335-1498 (TTY), as early as possible in the term. This will ensure that we both have all the tools and information that we need to have a successful semester working together. A comprehensive description of the services of that office can be obtained at http://sds.studentlife.uiowa.edu.

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[2] *Merriam-Webster Online,* s.v. "plagiarize," accessed January 6, 2016, http://www.merriam-webster.com/dictionary/plagiarize

## Reading and Topic Schedule

The required reading is to be completed **before** class each week and will be referenced in the weekly project materials and/or the Weekly Check-In. All readings are available electronically through the course ICON site or the University of Iowa Libraries. Please note that the reading/topic schedule may be modified to suit the needs of the class. We will discuss any changes as a group before they are made.

## Week 1 | Aug. 21 – Introduction to Computing Foundations

ACRL, "Information Literacy Competency Standards for Higher Education," http://www.ala.org/acrl/standards/informationliteracycompetency

Iowa CORE, "Technological Literacy," https://iowacore.gov/iowa-core/subject/21st-century-skills/2/technology-literacy

Office for Information Technology Policy's Digital Literacy Task Force, "Digital Literacy, Libraries, and Public Policy," (January 2013), http://www.districtdispatch.org/2013/01/on-the-front-lines-of-digital-inclusion/

## Week 2 | Aug. 28 – Binary, Bits, and Basics

Charles Petzold, "Bit by Bit by Bit," and "Bytes and Hex," *Code: The Hidden Language of Computer Hardware and Software* (Redmond, WA: Microsoft Press, 2000): 69-85 and 180-189.

Kenneth Thibodeau, "Overview of Technological Approaches to Digital Preservation and Challenges in Coming Years," *The State of Digital Preservation: An International Perspective* (Washington DC: Council on Library and Information Resources, 2002): 4-13.

## SEPTEMBER 4 – LABOR DAY

## Week 3 | Sept. 11 – Introduction to Raspberry Pi

Ryan Heitz, "Meet Raspberry Pi," *Hello Raspberry Pi!* (Shelter Island, NY: Manning, 2016): 3-32.

Neal Stephenson, *In the Beginning…Was the Command Line* (New York: Avon Books, 1999): 1-69.

Rob Zwetsloot, "The Raspberry PI PC Challenge," *The MagPi* 59 (July 2017): 16-29.

## Weeks 4 | Sept. 18 – HTML/CSS

w3School.com, "HTML Introduction," https://www.w3schools.com/html/html_intro.asp.

w3School.com, "CSS Introduction," https://www.w3schools.com/css/css_intro.asp.

Jay David bolter and Richard Grusin, "The World Wide Web," in *Remediation: Understanding New Media* (Cambridge, MA: MIT Press, 1999):196-210.

## Weeks 5 | Sept. 25 – HTML/CSS

Tim Berners-Lee, "Information Management: A Proposal," (CERN, March 1989): https://www.w3.org/History/1989/proposal.html

Vannevar Bush, "As We May Think, *The Atlantic* (July 1945): https://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/

Watch: "Memex Animation – Vannevar Bush's diagrams made real" https://youtu.be/c539cK58ees

## Weeks 6  | Oct. 2 – XML/XSLT

Julie Meloni, "A Pleasant Little Chat about XML," *ProfHacker* (blog), October 6, 2009: http://www.chronicle.com/blogs/profhacker/a-pleasant-little-chat-about-xml/22746

TEI <Text Encoding Initiative>, "A Gentle Introduction to XML," http://www.tei-c.org/release/doc/tei-p5-doc/en/html/SG.html

Anne J. Gilliland, "Setting the Stage" in *Introduction to Metadata, Third Edition,* Murtha Baca, ed. (Los Angeles: Getty, 2016): http://www.getty.edu/publications/intrometadata/setting-the-stage/

## Weeks 7 | Oct. 9 – XML/XSLT

Janet H. Murray, "The Library Model of Collocating Information," in *Inventing the Medium* (Cambridge, MA: MIT Press, 2012): 191-220.

Tony Gill, "Metadata and the Web" in *Introduction to Metadata, Third Edition*, Murtha Baca, ed. (Los Angeles: Getty, 2016): *http://www.getty.edu/publications/intrometadata/metadata-and-the-web/*

Sonia Yaco, "It's Complicated: Barriers to EAD Implementation" *American Archivist* 71 (Fall/Winter 2008): 456-475.

## Week 8 | Oct. 16 – Python

Andromeda Yelton, "Political and Social Dimensions of Library Code," and "Learning to Code," *Library Technology Reports* 51, no. 3 (April 2015): 22-25 and 26-30.

(skim) PFS Python Brochure http://brochure.getpython.info/media/releases/psf-python-brochure-vol.-i-final-download.pdf/view

## Weeks 9 | Oct. 23 – Python

Janet H. Murray, "Computational Strategies of Representation" and "Building Procedural Complexity," in *Inventing the Medium* (Cambridge, MA: MIT Press, 2012): 107-158.

## Week 10 | Oct. 30 – LAMP

Ed Krol, "What is the Internet" and "How the Internet Works," in *The Whole Internet: User's Guide and Catalog, Second Edition* (Sebastopol, CA: O'Reilley, 1994): 13-21 and 23-34.

## Week 11 | Nov. 6 – LAMP

Janet Abbate, "Building the ARPANET: Challenges and Strategies," in *Inventing the Internet* (Cambridge, MA: MIT Press, 1999): 43-81.

## Week 12 | Nov. 13 – LAMP

Finn Brunton, "Ready for the Next Message: 1971-1994," in *SPAM: A Shadow History of the Internet* (Cambridge, MA: MIT Press, 2013): 1-62.

## Weeks 13 | Nov. 27 – WordPress

Janet H. Murray, "The Structured Document Model: Using Standardized Metadata to Share Knowledge" in *Inventing the Medium* (Cambridge, MA: MIT Press, 2012): 253-287.

Kyle M. L. Jones and Polly Alida-Farrington, "Getting Started with Wordpress," *Library Technology Reports* (April 2011): 8-15.

## Weeks 14 | Dec. 4 – WordPress

Kyle M. L. Jones and Polly Alida-Farrington, "Guest Pieces," *Library Technology Reports* (April 2011): 34-60.