

GUIDELINES FOR CAPP INDEPENDENT STUDY PROJECTS/CLASSES

MULTIMEDIA OR OTHER DEVELOPMENT INDEPENDENT STUDY PROJECTS

The following guidelines apply to CAPP independent study classes related to multimedia or other development projects. All such projects must conform to the following general criteria:

1. There must be a legitimate need for the independent study course (i.e., the project is meaningful and relevant, and no other existing class could fulfill the educational need).
2. The work entailed by the project is reasonable academically, and the timeline/deliverables are clearly specified.
3. The process for advising the student and for evaluating the student's work involves appropriate subject-matter and technical advisors.

CAPP independent studies for a multimedia or other development project will require you to complete a significant body of work that combines technology in some way with an academically acceptable content knowledge area or discipline, such as your primary major. You must submit a written proposal outlining the specifics of your project in detail, including:

- The particular disciplinary topic you will study;
- Who will act as your subject-matter advisor in the topic area you chose;
- Who will serve as your technical advisor for matters related to learning and implementation of the technology that will be included in your project (multimedia, web, etc.);
- What your deliverables will be, and when they will be provided; NOTE: you must have at least three deliverables -- a content design document, a technology design document, and the final working product.

It is your responsibility to specify the details of your project in a written proposal due at least two weeks prior to the pre-registration date in the semester before you expect to enroll in the independent study course. Your proposal will be reviewed by a special CAPP committee. The proposal must be approved before you will be allowed to pre-register. The committee will provide you with feedback on your proposal as soon as possible, but it will be to your advantage to submit your proposal to the committee as early as possible. In your proposal, which should be at least 2-3 pages, you need to be very specific about how the bulleted points noted above will be addressed.

Below is an example of what a CAPP independent study project in this category might involve. This is only an example, but your proposed project should emulate this example in the sense of combining a significant disciplinary learning experience with development of a technology-based application using the three-part deliverable schedule. In this example, the student is interested in doing multimedia project that tells a story about some important aspect of history, such as a topic related to World War II. The project would unfold in three parts.

Part I of the project would require the student to find a subject-matter expert advisor (SME), for example a willing professor in History. Together with the SME, the student would define the knowledge

scope and content of the project. Then, the student and the SME would identify what original research on the WWII topic the student would need to do, which might include doing specific assigned readings, locating pictures, audio files, interviews, etc. The content and media would be selected so as to be relevant to the story to be told about the topic. In this part of the project, the student would actually learn concrete things about the designated history topic. The deliverable for Part I would be a 15-20 page research and content design document containing the content details of the story, the references consulted, and a specific listing of the media or other resources necessary for an accurate and complete presentation of the topic.

In Part II of the project, the student would work with a technical advisor to cast the project content into a multimedia format to tell the story. For this part of the project, the student would need to learn about whatever software applications would be needed for the final presentation, as well as about relevant esthetic/design issues like colors, timing, graphics, etc. This part, too, no doubt will involve assigned readings and will represent another important learning exercise, this time related to the development technology to be used in the project. The deliverable for Part II would be a 15-20 page technology design document including a detailed outline, flowchart, or storyboard showing how the content will be presented using the chosen technology.

Finally, in Part III of the project, the student would put the two previous parts together into a final working deliverable that would become the completed multimedia presentation. Ideally, the finished product would be significant and interesting enough to have it auditioned somewhere on campus at the end of the semester or beginning of the next, and then possibly moved to the CAPP website for archiving and display.

Remember, this is an example, but it illustrates the kind of project that would be acceptable to the CAPP committee under the present guidelines. Just like any other 3-credit course, this category of CAPP independent study course will involve a lot of work, but it will provide an opportunity to learn how to combine technology learning with disciplinary content learning in an interesting and valuable way.

In summary, to enroll in a CAPP independent study course for a multimedia or other development project, you must:

- Identify an academically acceptable disciplinary learning experience and a willing subject matter advisor;
- Identify a technical advisor;
- Submit a detailed written proposal at least two weeks prior to the pre-registration period in the semester before the course will be taken; the proposal must specify project details and deliverables and must include endorsements from all advisors;
- Obtain written approval from the CAPP review committee that the proposal meets the necessary requirements outlined above.

All proposals should be submitted by email to lbersai@nd.edu, ccrowell@nd.edu, and mwillan1@nd.edu. If you need suggestions for subject-matter or technical advisors, please contact the above committee well before you start work on your proposal.

PROGRAMMING INDEPENDENT STUDY COURSES

All courses undertaken in this category must conform to the following general criteria:

1. There is a legitimate need for the independent study course (i.e., students must prove it has been or will be impossible for the student to take an existing programming class during their time in the program). NOTE: Waiting until your last semester to try to enroll in a programming course is not acceptable proof.
2. The work entailed by the project is reasonable academically, and the timeline/deliverables are clearly specified.
3. The process for helping the student learn and for evaluating the student's work must involve an appropriate advisor who is well versed in the programming language to be learned.

In this independent study course, you will be expected to complete the equivalent of a regular programming course on a language of your choice. As part of these guidelines, you must provide the CAPP review committee with a specific written proposal outlining your course in detail, including:

- Exactly why you haven't been able and won't be able to take one the existing CAPP programming courses during your time in the program; NOTE: your proposal will not be acceptable to the committee if there is or has been a CAPP programming course you can or could have taken;
- The specific language you will learn, and why you picked that particular language;
- Who will act as your learning advisor for the language you choose;
- What specific learning exercises you will complete and when you will complete them;
- Who will help you with the technical matters related to the programming exercises you will complete;
- What final program/project you will complete to demonstrate your mastery of the language.

It is your responsibility to consult with your advisor to identify the details of your learning regimen and then to submit those details, along with the other information requested above, in a written proposal due at least two weeks prior to the pre-registration date in the semester before you expect to enroll in the independent study course. Your proposal must be approved by the CAPP review committee before you will be allowed to pre-register. The committee will provide you with feedback on your proposal as soon as possible, but it will be to your advantage to submit it to the committee as early as possible. In your proposal, which should be at least 2-3 pages, you need to be very specific about how the bulleted points noted above will be addressed.

Below is an example of what a CAPP programming independent learning project might involve. This is only an example, but your proposed project should emulate this example in terms of its specificity with respect to readings, learning goals, and schedule. This example is based on an independent study course on Java that recently has been offered by Dr. Michael Villano, a faculty member in Psychology and CAPP.

Dr. Villano represents the type of learning advisor you will need to identify for your programming independent study. You need to find someone who has a good working knowledge of the target language and its development resources, and who can help you develop a set of readings, learning objectives, and a learning schedule such as the following:

Readings

Java Game Programming chapter – PDF document

Your basic Wikipedia entry: A bit advanced description of OOP:

http://en.wikipedia.org/wiki/Object-oriented_programming

Dont' Fear the OOP!

An amusing essay using trashy western novels as the domain to explain how to do object-oriented design with Java examples. A bit wordy, but takes a very basic approach to explaining many features of classes, subclasses and inheritance. Some of you might think it's a fun way to learn OOP and some of you might think it's just dorky.

<http://sepwww.stanford.edu/sep/ion/family/jos/oop/oop1.htm>

Sun's tutorial on OOP

<http://java.sun.com/docs/books/tutorial/java/concepts/index.html>

Sun follow up tutorial with much more detail on classes:

<http://java.sun.com/docs/books/tutorial/java/javaOO/classes.html>

Suggested language references:

Java	Deitel, P.J. & Dietel, H.M (2007)- <i>Java How to Program 7th Edition</i> . Pearson: Upper Saddle River, NJ.
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Big (1596 pages), expensive (\$108), but a complete course in a book.

Suggested software development references:

McConnell, S. (2004). *Code Complete 2*. Microsoft Press: Redmond.

Learning Objectives

The following learning objectives specify the progress you will make through programming tasks in Java. Each task will result in a module of reusable code that can be adapted to new applications in the future. By the end of the semester, you should be able to:

- Confidently “compile and run” a computer program when you are provided source code in Java.
- Develop your own computer application.
- Select appropriate widgets and design and develop a graphical user interface in order to automate the collection of information from users
- Apply randomization techniques
- Validate and test your own programs and code

Schedule

1/22/09	Read Chapter 1 <i>Assignment: Netbeans install, Hello World program</i>
1/29/09	Read Chapter 2, Exercise 2.2.
Due 2/12	Read Chapters 3 and 4. Exercises 3.4, 3.5 (Hint set a = 1.0, you'll see), 4.2 and 4.4.
Due 2/26	Read Chapter 5, Exercises 5.1, 5.2, 5.3, 5.4 a-c, 5.7 and 5.8.
Due 3/5	Read Chapter 6, Exercises 6.2 and 6.3
Due 3/19	Read Chapter 7, Exercises 6.2 and 6.3 still due. Complete Exercises 7.1 a thru d, 7.8 a - d and 7.9 a & b
Due 3/26	<p>For the purpose of the Capt. Crunch decoder assignment, the following code snippet demonstrates how to convert chars to ints and back:</p> <pre> char ch = 'A'; System.out.println(ch); int j = (int)ch; //converts char to int System.out.println(j); char chNew = (char)(j + 13); //converts int to char System.out.println(chNew); </pre> <p>Chapter 8. “Look at” exercises 8.1 through 8.3 (you don’t have to do the diagrams, just understand the concepts that are reviewed.) Then, you can do exercise 8.4 and if you have</p>

	time 8.5.
Due 4/2	Read Chapter 9 “Create our own objects”, Do Exercise 9.1 and Madlibs
Due 4/14	Read Chapter 10 – “Arrays” 10.5, 10.6, 10.10 a. from scratch, b and c; 10.13
Due 4/21	Read Chapter 11 “Arrays of Objects” – 11.2
Due 4/23	Read Chapter 12 – “Objects of Arrays”- 12.2 & 12.3
Due 4/28 – last class day	Appendix C - Input and Output Optional: Appendix A - Program Development Plan Appendix B – Debugging
Due Last Day of Finals – May 8 th	Final Project – GUI based Blackjack game

Remember, the above is an example, but it illustrates the kind of independent study project that would be acceptable to the CAPP committee under these guidelines. Just like any other 3-credit course, this CAPP independent study course will involve a lot of work, but it will give you the opportunity to learn programming in an interesting and flexible way.

In summary, to enroll in a CAPP programming independent study course, you must:

- Identify a specific language and a willing language-expert advisor;
- State why you want to take that language and show why you can’t or haven’t been able to take a normal CAPP programming language course;
- Submit a detailed written proposal at least two weeks prior to the pre-registration period in the semester before the course will be taken; NOTE: your proposal should specify readings, objectives, and exercises and should include an advisor endorsement;
- Obtain written approval from the CAPP review committee that the proposal meets the necessary requirements outlined above.

All proposals should be submitted by email to lbersai@nd.edu, ccrowell@nd.edu, and mwillan1@nd.edu. If you need suggestions for a learning advisor, please contact the above committee well before you start work on your proposal.