# INFO-I 308 - Information Representation

## Spring 2016
11:30 am to 12:45 pm  
Monday, Wednesday  
NS 070

<table>
<thead>
<tr>
<th>Instructor:</th>
<th>Dr. Hossein Hakimzadeh (pronounced Hakim-Zadeh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office:</td>
<td>Northside 160-H</td>
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<tr>
<td>Telephone:</td>
<td>574-520-4517 (Office)</td>
</tr>
<tr>
<td></td>
<td>574-520-5521 (Dept. Secretary)</td>
</tr>
<tr>
<td>E-mail:</td>
<td><a href="mailto:hhakimza@iusb.edu">hhakimza@iusb.edu</a></td>
</tr>
<tr>
<td>Home Page:</td>
<td><a href="http://cs.iusb.edu/~hhakimza">http://cs.iusb.edu/~hhakimza</a></td>
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</tbody>
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**Office Hours:**

- **Face to face office hours:** M,W (1:00am - 3:00pm)  
  Before or after my classes or by appointment.
- **Virtual Office:** [http://connect.iu.edu/virtualofficehours/](http://connect.iu.edu/virtualofficehours/)  
  (enter as a guest, using your first name to login)
- Or by appointment.

**Text:**

- Lecture notes will be provided by the instructor.
- Data Structures and Algorithm Analysis in C++ by Mark Allen Weiss  
  (any edition will work.)

**Software:**

- Microsoft Office, Visual Studio C++, MySQL

**Course Information:**

P: INFO I201, and INFO I211. The basic structure of information representation in digital information systems. Beginning with low-level computer representations such as common character and numeric encodings. Followed by elementary data structures such as linked structures, queues, stacks and trees. Introduction to hash tables. Introduction to file organizations. Introduction to formal design and query languages through Entity Relationship Modeling, the Relational Model, SQL and other query languages.

**Course Goals / Outcomes**

The student who completes this course:

- Will understand the basic method of representing data inside a computer (characters and numbers)
- Will learn the binary, octal and hexadecimal number systems.
- Will learn the basic arithmetic manipulation of binary numbers.
- Will learn the basic techniques in representing different types of data. (Integer, Char, Boolean, String, Array, Sound, Images, Video, etc.)
- Will learn and implement the basic data structures such as Queues, Stacks, Trees and Hash tables.
- Will learn about basic file organizations
- Will learn about the basics of logical data modeling, (ER)
- Will learn about the basics of relational model and databases
- Will learn about declarative languages such SQL and their use in data retrieval.

**How do I get help?**

There are a number of different resources that can help you succeed in this
course. These include:
- The course web site
- Lecture notes
- Assignments
- Labs
- Video Lectures
- Office hours
- Chat room interaction with other students
- Sample code

Grading System:

Your final grade will be determined as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>40%</td>
<td>(5-6 assignments)</td>
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<tr>
<td>Labs</td>
<td>10%</td>
<td>(5-6 Labs)</td>
</tr>
<tr>
<td>Hour Exam</td>
<td>50%</td>
<td>(2 to 3 hour exams)</td>
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>= 90%   A  
>= 80%   B  
>= 70%   C  
>= 60%   D  
Below 60%  F

Plus and minus grades are given if an average falls within 1.5% of the cutoff score; for example, an average of 88.6% will earn a B+.

Make-Up Policy:

No make-up exams will be given unless an excused absence is approved BEFORE the exam is given. There are no make-ups on programs since they are assigned well before they are due.

Assignments:

Assignments will be provided online. They are typically due approximately 7 to 14 days later. Due dates will be given on each assignment or in class. **Late programs or assignments are not accepted; turn in what you have completed by the due date.** I may ask you to present your assignment in my office, so do not discard your assignment material after submission. Start your assignments early.

Assignments should be submitted both to the dropbox before 12:00 midnight (of the due date). A printed copy must also be submit by the next class period.

Copying Policy:

No student is permitted to copy another person’s assignment. If copying has occurred, I will give both individuals an "F" for the assignment and/or course.

Final Exam:

Mon, May 2, 2016 at 11:30am

Hour Exams, In-class projects & Quizzes

TBA

ADA Disability Statement

I If you have a disability and need assistance, special arrangements can be made to accommodate most needs. Contact Director of Disabled Student Services (Administration Building, room 149, telephone number 520-4832), as soon as possible to work out the details. Once the director has provided you with a letter attesting to your needs for modification, bring the letter to me. For more information please visit the web site for Office of Disabled Student Services [www.iusb.edu/~sbdss/services.shtml](http://www.iusb.edu/~sbdss/services.shtml)

Religious Accommodations Statement

If any student will require academic accommodations for a religious observance, please provide me with a written request to consider a reasonable modification for that observance by the end of the second week of the course. Contact me after class, during my office hours, or by individual appointment to discuss the issue. If after discussion we reach no consensus, either party or both should seek the advice of the Department
Academic Honesty Statement

It is the responsibility of the student to know of the prohibited actions such as cheating, fabrication, plagiarism, academic, and personal misconduct, and thus, to avoid them. All students are held to the standards outlined in the code. Please reference the entire code for a complete listing ([www.dsa.indiana.edu/Code/](http://www.dsa.indiana.edu/Code/)). Any violation may result in serious academic penalty, ranging from receiving a warning, to failing the assignment, to failing the course, to expulsion from the University.

Use of Laptops, PDAs and Cell phones in class

**The use of laptops should be limited to taking notes or viewing lecture material online. (No chatting, web surfing, checking email, etc.)**

**The use of Cell phones and other electronic devices are prohibited. You may leave the classroom and use these devices if necessary. However, making calls or texting in class is not allowed.**

How to do well in this course

As with most things in life, you will get out what you put in. If you want to do well in this course, you should do the following:

1. Attend all lectures, labs, group meetings, etc. and take good notes.
2. Study the related material (notes, slides, videos, etc) before coming to the lecture and review your notes and lecture material after each lecture.
3. Participate in class discussion and ask questions if you don’t understand the subject.
4. Start your assignments early (on the day they are assigned) and ask for guidance or help if you are not sure what you are expected to do.
5. If you are having difficulty, get help. I will be happy to help you. No question is a dumb question.
6. Check the course web site(s) frequently.

Sexual Misconduct

**What you should know about sexual misconduct:** IU South Bend does not tolerate acts of sexual misconduct, including sexual violence. If you have experienced sexual violence, or know someone who has, the University can help. It is important to understand that federal regulations and University policy require faculty to immediately report complaints of sexual misconduct known to them to the IU South Bend Deputy Title IX Coordinator to ensure that appropriate measures are taken and resources are made available. IU South Bend will work with you to protect your privacy by sharing information with only those that have a legitimate administrative or legal reason to know. If you are seeking help and would like to speak to someone confidentially, you can make an appointment with a Mental Health Counselor on campus through the Student Counseling Center. Find more information about sexual violence, including campus and community resources, at [http://stopsexualviolence.iu.edu/](http://stopsexualviolence.iu.edu/).
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<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
<th>Assignments</th>
<th>Tests</th>
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<tbody>
<tr>
<td>Jan. 11, 13</td>
<td>Part 1 - Physical Data Representation</td>
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<tr>
<td>Jan. 18, 20</td>
<td>Assign-1 (C++ review)</td>
<td>Jan 18, Martin Luther King Jr. Holiday (NO CLASS)</td>
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<tr>
<td>Jan. 25, 27</td>
<td>Part 2 - Data Structures</td>
<td>Assign-2 (Data Representation, and more C++ review)</td>
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<td>Feb. 1, 3</td>
<td>Assign-3 (linked Structures)</td>
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<td>Feb. 8, 10</td>
<td>Assign-4 (Hash Table)</td>
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<tr>
<td>Feb. 22, 24</td>
<td>Spring Break (NO CLASS)</td>
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<tr>
<td>Feb. 29, March 2</td>
<td>Part 3 - File Organizations</td>
<td>Assign-5 (Hash Table)</td>
<td>March 28 Test 2 (Data Structures)</td>
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<tr>
<td>March 7, 9</td>
<td>Assign-6 (Data Representation and Information Retrieval using Files)</td>
<td></td>
<td>Final Exam (Comprehensive)</td>
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<tr>
<td>March 14, 16</td>
<td>Spring Break (NO CLASS)</td>
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<tr>
<td>March 21, 23</td>
<td>Part 4 - File Organization and Information Retrieval</td>
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<tr>
<td>March 28, 30</td>
<td>Assign-5 (Hash Table)</td>
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<tr>
<td>April 4, 6</td>
<td>Assign-7 (Data modeling and Database design)</td>
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<tr>
<td>April 11, 13</td>
<td>Assign-6 (Data Representation and Information Retrieval using Files)</td>
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<tr>
<td>April 18, 20</td>
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<tr>
<td>April 25, 27</td>
<td>Review for final</td>
<td>Assign-7 (Data modeling and Database design)</td>
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<td>May 2 (Monday)</td>
<td>Final Exam (Comprehensive)</td>
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