Computer Science

CS 411  **Database Systems**  credit: 3 OR 4 hours.
Examination of the logical organization of databases: the entity-relationship model; the hierarchical, network, and relational data models and their languages. Functional dependencies and normal forms. Design, implementation, and optimization of query languages; security and integrity; concurrency control, and distributed database systems. 3 undergraduate hours. 3 or 4 graduate hours.
Prerequisite: CS 225.

<table>
<thead>
<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>69453</td>
<td>Online</td>
<td>CPS</td>
<td>ARRANGED -</td>
<td>-</td>
<td>-</td>
<td>Alawini, A</td>
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</table>
|       | Credit Hours: 3 hours  
Restricted to O/C Engineering City Scholars students. |
| 67992 | Online      | DSO     | ARRANGED -    | -    | -                         | Chang, K   |
|       | Credit Hours: 4 hours  
Restricted to MCS:Computer Sci Online -UIUC or NDEG:Computer Science Onl-UIUC.  
This course is only for students that are in the Computer Science MCS-DS Program. Additional Coursera ID verification and ProctorU fees may apply. |
| 31352 | Lecture-Discussion | N3     | 02:00 PM - 03:15 PM | TR   | 2079 - Natural History Building | Alawini, A |
|       | Credit Hours: 3 hours  
For up-to-date information about CS course restrictions, please see the following link: http://go.cs.illinois.edu/CSregister |
| 31355 | Lecture-Discussion | N4     | 02:00 PM - 03:15 PM | TR   | 2079 - Natural History Building | Alawini, A |
|       | Credit Hours: 4 hours  
Restricted to Graduate - Urbana-Champaign.  
For up-to-date information about CS course restrictions, please see the following link: http://go.cs.illinois.edu/CSregister |
| 40658 | Online      | ONL     | ARRANGED -    | -    | -                         | Chang, K   |
|       | Credit Hours: 4 hours  
Restricted to MCS:Computer Sci Online -UIUC.  
Restricted to CS online MCS Students. ProctorU and other fees may apply. |
| 69361 | Lecture-Discussion | P3     | 03:30 PM - 04:45 PM | MW   | 0216 - Siebel Center for Comp Sci | Chang, K   |
|       | Credit Hours: 3 hours  
For up-to-date information about CS course restrictions, please see the following link: http://go.cs.illinois.edu/CSregister |
| 69362 | Lecture-Discussion | P4     | 03:30 PM - 04:45 PM | MW   | 0216 - Siebel Center for Comp Sci | Chang, K   |

Credit Hours: 4 hours  
Restricted to Graduate - Urbana-Champaign.
For up-to-date information about CS course restrictions, please see the following link: http://go.cs.illinois.edu/CSregister