Step 1: Identify the entities
- department
- faculty member
- course
- semester
- section
- student

Step 2: Attributes/properties

1) department
   i) name - key
   ii) address
   iii) phone number
   iv) department chairman - relationship
   v) courses - relationship
   vi) faculty - relationship

2) faculty
   i) SSN - key
   ii) name
   iii) office
   iv) phone number
   v) salary
   vi) chairs (department) - relationship
   vii) works for (department) - relationship
   viii) teaches (section) - relationship
Relationships

Cardinality Ratio | Participation Constraint
--- | ---
1:1 | total : partial
1:N | partial : total
1:N | partial : total
1:N | partial : total
1:N | partial : total
N:N | partial : partial
* (underlined) is key attribute
2. entities
   - student
   - department
   - course
   - grade
   - section — weak entity

2. properties/attributes
   1. student
      i) name
         a) last
      ii) student number — key
      iii) SSN — key
      iv) current address & phone
      v) permanent address & phone
         a) city
         b) state
         c) zip
      vi) birthdate (DOB)
      vii) sex
      viii) class
   ix) degree
      x) major
      xi) minor
      xii) grade
Relationships

<table>
<thead>
<tr>
<th>Cardinality</th>
<th>Participation Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>N : 1</td>
<td>total : partial</td>
</tr>
<tr>
<td>N : 1</td>
<td>total : partial</td>
</tr>
<tr>
<td>1 : N</td>
<td>partial : total</td>
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<tr>
<td>1 : N</td>
<td>partial : total</td>
</tr>
<tr>
<td></td>
<td>Identifying relationship</td>
</tr>
<tr>
<td></td>
<td>(not binary relationship)</td>
</tr>
</tbody>
</table>

1. Major (Student : Department)
2. Minor (Student : Department)
3. Offers (Department : Course)
4. Has (Course : Section)
5. Grade Report (Student : Section : Grade)