

**Urbanization Challenges By Design**  
**IGERT**  
**Suggested Elective Courses 2012-2012**

| Category                | Course Number | Course Title   | Number of Credits | Prerequisites            | Fall 2011 | Spring 2012 |
|-------------------------|---------------|--|-------------------|--------------------------|-----------|-------------|
| Built Environment       | PLA4112       | Physical Structure of Cities                         | 3                 |                          |           |             |
| Built Environment       | CIEN E4021    | Elastic/Plastic Analysis-Structures                  | 3                 | CIEN 3121                | X         |             |
| Built Environment       | CIEN E4100    | Earthquake and Wind Engineering                      | 3                 | ENME E3106               |           | x           |
| Built Environment       | CIEN E4243    | Foundation Engineering                               | 3                 | CIEN E3141               | X         |             |
| Built Environment       | CIEN E4130    | Design of Construction Systems                       | 3                 | CIEN E3125               | X         |             |
| Built Environment       | CIEN E4131    | Principles of Construction Techniques                | 3                 | CIEN 4129                |           | x           |
| Built Environment       | CIEN E4133    | Capital Facility Planning \$ Financing               | 3                 | CIEN E4129               | X         |             |
| Built Environment       | CIEN E4135    | Strategic Management in Design & Construction        | 3                 | CIEN E4129               |           |             |
| Built Environment       | CIEN E4136    | Entrepreneurship in Civil Engineering & Construction | 3                 | CIEN E412<br>CIEN E4134  |           |             |
| Built Environment       | CIEN E4213    | Elastic and Inelastic Buckling of Structures         | 3                 |                          | x         |             |
| Built Environment       | CIEN E4226    | Advanced Design of Steel Structures                  | 3                 |                          |           | x           |
| Built Environment       | CIEN E4232    | Advanced Design of Concrete Structures               | 3                 |                          |           | x           |
| Built Environment       | CIEN E4233    | Design of Large Scale Bridges                        | 3                 | CIEN E3121<br>CIEN E3127 | X         |             |
| Built Environment       | CIEN E4234    | Design of Large Scale Building Structures            | 3                 | CIEN E3121<br>CIEN E3127 |           | x           |
| Built Environment       | CIEN E4241    | Geotechnical Engineering Fundamentals                | 3                 | CIEN E3141               |           |             |
| Built Environment       | CIEN E4022    | Bridge Design and Management                         |                   | CIEN E3125               |           | x           |
| Category                | Course Number | Course Title   | Number of Credits | Prerequisites            | Fall 2011 | Spring 2012 |
| Transportation/Planning | PLA 6434      | Introduction to Transportation Planning              | 3                 |                          |           |             |
| Transportation/Planning | PLA 4214      | Transportation and Land Use                          | 3                 |                          |           |             |
| Transportation/Planning |               | Sustainable Transportation                           |                   |                          |           |             |
| Transportation/Planning | CIEN E4010    | Tranportation Engineering                            | 3                 |                          |           |             |
| Transportation/Planning | PLA 4008      | History and Theory of Planning                       | 3                 |                          | X         |             |
| Transportation/Planning | PLA 4620      | Public Financing of Urban Development                | 3                 |                          |           |             |
| Transportation/Planning | PLA 4208      | Planning Techniques                                  | 3                 |                          |           |             |
| Transportation/Planning | PLA A4340     | Sustainable Zoning & Land Use Regulation             | 3                 |                          | X         |             |
| Transportation/Planning | PLA A4579     | Intro to Environmental Planning                      | 3                 |                          | X         |             |
| Transportation/Planning | PLA A6330     | Site Planning and Support Systems                    | 3                 |                          | X         |             |
| Transportation/Planning | PLAN A3283    | Issues in International Development Plann            | 3                 |                          | X         |             |

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| Water/ Energy/ Waste         | MECH E4210    | Energy Infrastructure Planning                     | 3                 |                          | X         |             |
| Water/ Energy/ Waste         | ECIA W4100    | Management & Development of Water Systems          | 3                 |                          |           | X           |
| Water/ Energy/ Waste         | EAAE E4150    | Air pollution prevention and control               | 3                 |                          |           | X           |
| Water/ Energy/ Waste         | EAAE E4160    | Solid and hazardous waste management               | 3                 |                          |           | X           |
| Water/ Energy/ Waste         | EAAE E4163    | Environmental engineering: waster water            | 3                 |                          |           |             |
| Water/ Energy/ Waste         | EAIA E4200    | Alternative Energy Sources                         | 3                 |                          |           | X           |
| Water/ Energy/ Waste         | EAAE E4350    | Planning and mangement of urban hydrologic systems | 3                 | ENME E3161               | X         |             |
| Water/Energy/ Waste          | CIEN E4163    | Environmental Engineering: Wastewater              | 3                 |                          |           |             |
| Water/Energy/ Waste          | CIEN E4252    | Environmental Engineering                          | 3                 | CHEM C1430<br>ENME E3161 |           |             |
| Water/Energy/ Waste          | CIEN E4257    | Contaminant Transport In Subsurface Syst           | 3                 | CIEE E 3250              |           |             |
| Category                     | Course Number | Course Title                                       | Number of Credits | Prerequisites            | Fall 2011 | Spring 2012 |
| Research & Technical Methods | CIEN E4111    | Uncertainty and Risk in Infrastructure Systems     | 3                 |                          | X         |             |
| Research & Technical Methods | CIEN E4129    | Managing Engineering & Construction Proc           | 3                 |                          | X         |             |
| Research & Technical Methods | PLA 6065      | Environmental Impact Assesment                     | 3                 |                          |           |             |

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| Research & Technical Methods | PLA 6217   | Techniques of Project Evaluation            | 3 |   |   |   |
| Research & Technical Methods | EAAE E4006 | Field methods for environmental engineering | 3 | ENME E3161                                      |   | X |
| Research & Technical Methods | EAAE E4009 | Geographic information systems              | 3 |   | X |   |
| Research & Technical Methods | EAAE E4010 | Remote sensing and environmental change     | 3 | EAAE E4009<br>EESC<br>W4050<br>or Spec.<br>Perm |   | X |
| Research & Technical Methods | EAAE E4257 | Environmental data analysis and modeling    | 3 | SIEO W3600<br>or<br>SIEO W4250                  |   | X |