## IPSE UG Students Enrolled in Fall 2010 through 2017 Summary Table of Changes in IPSE Group C Courses Offered by Dept. of Computer Science & Engineering, School of Fundamental Sci. & Eng. For Fall 2017 course registration periods \* You need to earn credits of Group C courses provided as "required", "elective required" or "elective" for your enrollment year. Please refer to column [A], [B], [C] or [D] here below according to your enrollemnt year. Also

| check the relev                                    |   | <u>ır enrollment ve</u>                           | _   | _                       |           | •           | •            |                        |                 |             |           |             |   |  |                            |   | [D] here below according to your enronemit year. This  |
|--|---|---|---|-------------------------|-----------|-------------|--------------|------------------------|-----------------|-------------|-----------|-------------|---|--|----------------------------|---|--|
| [A]  | [B]   | [C]   | [D]   |                         | Numbe     |             |              | week (* a<br>2 (hours) |                 |             |           | veek) is    | Current Cour                                      | rse Availabilit                                  | y by Your Enr              | ollment Year  |  |
|  | Carriculum for<br>Students Enrolled               | Carriculum for                                    | Carriculum for<br>Students Enrolled               | Number<br>of<br>credits |           | First year  |              | Second year            |                 | Third year  |           | Fourth year |   | O: ava<br>X: not a<br>*: conditiona<br>(see Note | vailable<br>ally available |   | Note   |
| Students Enrolled<br>in Fall 2010/ 2011            | in Fall 2012                                      | Students Enrolled<br>in Fall 2013                 | in Fall 2014/ 2015/<br>2016/2017                  |                         | Fall sem. | Spring sem. | Fall<br>sem. | Spring sem.            | Fall sem.       | Spring sem. | Fall sem. | Spring      | For students<br>enrolled in<br>Fall 2010/<br>2011 |  | enrolled in<br>Fall 2013   | For students<br>enrolled in<br>Fall 2014/<br>2015/ 2016 |  |
| Research Project B                                 | Research Project B                                | Research Project B                                | Research Project B                                | 4                       |           |             |              |                        |                 | 2           |           |             | O<br>(requireed)                                  | O<br>(requireed)                                 | O<br>(requireed)           | O<br>(requireed)  |  |
| Research Project C                                 | Research Project C                                | Research Project C                                | Research Project C                                | 4                       |           |             |              |                        |                 |             | 2         |             | O<br>(requireed)                                  | O<br>(requireed)                                 | O<br>(requireed)           | O<br>(requireed)  |  |
| Introduction to<br>Computer Science                | -   | -   | -   | 2                       | 2         |             |              |                        |                 |             |           |             | *   | Х  | Х                          | Х   | * originally allocated to fall semester of 1st year, but from spring 2013, CHANGED TO spring semester of 1st year.  * Another class available from fall 2014; allocated to 1st year.  * For students enrolled in Fall 2012, Fall 2013, Fall 2014 & Fall 2015, this course replaced "Introduction to Computer Science (spring, 1st year)" classified as a Group B Required course from fall 2012.  * For fall semester 2015, there is only one class available. |
| Modeling   | -   | -   | -   | 2                       |           | 2           |              |                        |                 |             |           |             | X   | X  | X                          | X   | * course cancelled from spring 2014  |
|  |   |   |   |                         |           |             |              |                        |                 |             |           |             | O (elective                                       | O (elective                                      | O (elective                | O (elective   |  |
| Circuit Theory A                                   | Circuit Theory A                                  | Circuit Theory A                                  | Circuit Theory A                                  | 2                       |           |             | 2            |                        |                 |             |           |             | requireed)  | requireed)                                       | requireed)                 | requireed)  |  |
| Logic Circuits                                     | Logic Circuits                                    | Logic Circuits                                    | Logic Circuits                                    | 2                       |           |             | 2            |                        |                 |             |           |             | O (elective                                       | O (elective                                      | O (elective                | O (elective   |  |
| Fundamentals of                                    | Fundamentals of                                   | Fundamentals of                                   | Fundamentals of                                   |                         |           |             |              |                        |                 |             |           |             | requireed) O (elective                            | requireed) O (elective                           | requireed) O (elective     | requireed) O (elective                                  |  |
| Programming  | Programming                                       | Programming                                       | Programming                                       | 2                       |           |             | 2            |                        |                 |             |           |             | requireed)  | requireed)                                       | requireed)                 | requireed)  |  |
| Mathematical<br>Foundations of<br>Computer Science | -   | -   | -   | 2                       |           |             | 2            |                        |                 |             |           |             | O (elective requireed)                            | *  | *                          | *   | * For students emrolled in Fall 2012, Fall 2013, Fall 2014 & Fall 2015, this course cancelled from fall 2012. Replacement course is available; Discrete Mathematics has the same content of the cancelled course. If you earn the credit of Discrete Mathematics, it is counted as a Group B elective required.  |
| Algorithms and                                     | Algorithms and                                    | Algorithms and                                    | Algorithms and                                    | 2                       |           |             |              | 2                      |                 |             |           |             | O (elective                                       | O (elective                                      | O (elective                | O (elective   |  |
| Data Structures                                    | Data Structures                                   | Data Structures                                   | Data Structures                                   | _                       |           |             |              |                        |                 |             |           |             | requireed)  | requireed)                                       | requireed)                 | requireed)  |  |
| Computer Systems                                   | Computer Systems                                  | Computer Systems                                  | Computer Systems                                  | 2                       |           |             |              | 2                      |                 |             |           |             | O (elective requireed)                            | `  | ,                          | ,   |  |
| Signal Processing                                  | Signal Processing                                 | Signal Processing                                 | Signal Processing                                 | 2                       |           |             |              |                        | 2               |             |           |             | O (elective requireed)                            |  | O (elective requireed)     |   |  |
| and Engineering                                    | Computer Science<br>and Engineering<br>Laboratory | Computer Science<br>and Engineering<br>Laboratory | Computer Science<br>and Engineering<br>Laboratory | 2                       |           |             |              |                        | 4 <del>-2</del> |             |           |             | O (elective requireed)                            | O (elective requireed)                           | O (elective requireed)     | O (elective requireed)                                  | * number of class hours per week changed from fall 2012.   |
| Information<br>Network Systems                     | Information<br>Network Systems                    | Information<br>Network Systems                    | Information<br>Network Systems                    | 2                       |           |             |              |                        | 2               |             |           |             | O (elective requireed)                            | O (elective requireed)                           | O (elective requireed)     | O (elective requireed)                                  |  |

| [A]  | [B]  | [C]  | [D]   |                   | Numbe      |             |              |             |              | ute long cl                       |              |      |   |  |  |   |   |
|--|--|--|---|-------------------|------------|-------------|--------------|-------------|--------------|-----------------------------------|--------------|------|---|--|--|---|---|
|  | Carriculum for<br>Students Enrolled                      | Carriculum for<br>Students Enrolled  | Carriculum for<br>Students Enrolled   | Number of credits | First year |             | Second year  |             | Third year   |                                   | Fourth year  |      |   | X: not a                                 | ailable<br>available<br>ally available<br>e section) |   | Note  |
| in Fall 2010/ 2011                                 | in Fall 2012   | in Fall 2013   | in Fall 2014/ 2015/<br>2016/2017  |                   | Fall sem.  | Spring sem. | Fall<br>sem. | Spring sem. | Fall<br>sem. | Spring sem.                       | Fall<br>sem. | sem. | For students<br>enrolled in<br>Fall 2010/<br>2011 | For students<br>enrolled in<br>Fall 2012 | For students<br>enrolled in<br>Fall 2013             | For students<br>enrolled in<br>Fall 2014/<br>2015/ 2016 |   |
| Research Project A                                 | Research Project A                                       | Research Project A   | Research Project A  | 2                 |            |             |              |             | 2            |                                   |              |      | O (elective requireed)                            | O (elective requireed)                   | O (elective requireed)                               | O (elective requireed)                                  |   |
| Operating Systems                                  | Operating Systems  | Operating Systems  | Operating Systems   | 2                 |            |             |              |             |              | 2                                 |              |      | O (elective                                       | O (elective                              | O (elective  | O (elective   |   |
| Information Security > Information Security Basics | Information Security > Information Security Basics       | Information Security > Information Security Basics                                     | Information Security > Information Security Basics                                      | 2                 |            |             |              |             |              | 2                                 |              |      | O (elective requireed)                            | O (elective requireed)                   | O (elective requireed)                               | O (elective requireed)                                  | * course name changed from spring 2014.   |
| Research Project D                                 | Research Project D                                       | Research Project D   | Research Project D  | 2                 |            |             |              |             |              |                                   |              | 2    | O (elective requireed)                            | O (elective requireed)                   | O (elective requireed)                               | O (elective requireed)                                  |   |
| Electrodynamics                                    | Electrodynamics  | Electrodynamics  | Electrodynamics   | 2                 |            |             |              | 2           |              | 2                                 |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * originally allocated to spring semester of 2nd year, but from spring 2017, CHANGED TO spring semester of 3rd year.  |
| Electronic Circuits                                | Electronic Circuits                                      | Electronic Circuits  | Electronic Circuits   | 2                 |            |             |              |             | 2            |                                   |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  |   |
|  | Communication<br>Systems                                 | Communication<br>Systems   | Communication<br>Systems  | 2                 |            |             |              |             | 2            |                                   |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  |   |
| Software   | Software   | Software   | Software  | 2                 |            |             |              |             | 2            |                                   |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  |   |
| Engineering Teletraffic Theory                     | Engineering Teletraffic Theory                           | Engineering Teletraffic Theory   | Engineering Teletraffic Theory  | 2                 |            |             |              |             | 2            |                                   |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  |   |
| Telecommunication and the                          | Info-<br>Telecommunication<br>and the<br>Standardization | Info-<br>Telecommunication<br>and the<br>Standardization                               | Info-<br>Telecommunication<br>and the<br>Standardization                                | 2                 |            |             |              |             | 2            |                                   |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  |   |
| -  | -  | Information Telecommunication Systems  | Information Telecommunication Systems   | 2                 |            |             |              |             | 4            |                                   |              |      | X   | X  | X  | X   | * course cancelled from fall 2015.  |
| Information Theory                                 | Information Theory                                       | Information Theory   |   | 2                 |            |             |              |             |              | 4 <del>-2</del><br>first-<br>half |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * number of class hours per week changed from spring 2014.  * this course allocated the first-half spring semester of the 3rd year.   |
|  | Transmission<br>Theory                                   | Transmission<br>Theory   | Transmission Theory   | 2                 |            |             |              |             |              | 2                                 |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  |   |
| Wireless   | Wireless   | Wireless   | Wireless  | 2                 |            |             |              |             |              | 2                                 |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  |   |
| Multimedia   |  | Communication Multimedia   | Communication Multimedia  | 2                 |            |             |              |             |              | 2                                 |              |      |   |  | O (elective)   |   |   |
|  | Systems<br>Mobile  | Systems<br>Mobile  | Systems<br>Mobile   |                   |            |             |              |             |              |                                   |              |      |   |  |  |   |   |
|  | Communications   | Communications   | Communications  | 2                 |            |             |              |             |              | 2                                 |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  |   |
| -  | -  | Computer Graphics<br>and Image<br>Processing<br>> Image<br>Engineering<br>Fundamentals | Introduction to Computer Graphics and Image Processing > Image Engineering Fundamentals | 2                 |            |             |              |             | 2            | . 2                               |              |      | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from spring 2016; allocated to 3rd year  * originally allocated to fall semester of 3rd year, but from spring 2016, CHANGED TO spring semester of 3rd year.  * Not available for spring 2016  * course name changed from spring 2017. |

| [A]                | [B]                                 | [C]                                 | [D]                                       |                         | Numbe        | er of class | _            |             |              | ute long cl<br>ble below) | _                | veek) is | Current Cou                                       | rse Availabilit                          | y by Your Eni  | rollment Year   |   |
|--------------------|-------------------------------------|-------------------------------------|---|-------------------------|--------------|-------------|--------------|-------------|--------------|---------------------------|------------------|----------|---|--|--|---|---|
|                    | Carriculum for<br>Students Enrolled | Carriculum for<br>Students Enrolled | Carriculum for<br>Students Enrolled       | Number<br>of<br>credits | First year   |             | Second year  |             | Third year   |                           | Fourth year      |          |   | X: not a                                 | ailable<br>available<br>ally available<br>e section) |   | Note  |
| in Fall 2010/ 2011 | in Fall 2012                        | in Fall 2013                        | in Fall 2014/ 2015/<br>2016/2017          |                         | Fall<br>sem. | Spring sem. | Fall<br>sem. | Spring sem. | Fall<br>sem. | Spring sem.               | Fall<br>sem.     | sem.     | For students<br>enrolled in<br>Fall 2010/<br>2011 | For students<br>enrolled in<br>Fall 2012 | For students<br>enrolled in<br>Fall 2013             | For students<br>enrolled in<br>Fall 2014/<br>2015/ 2016 |   |
| Network            | Network                             | Network                             | Network                                   | 2.                      |              |             |              |             |              |                           | 2.               |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from fall 2016; allocated to 4th year   |
| Engineering        | Engineering                         | Engineering                         | Engineering                               |                         |              |             |              |             |              |                           |                  |          | O (cicciive)                                      | O (cicciive)                             | O (ciccuve)  | O (cicciive)  | new course is available from fair 2010, anocated to 4th year  |
| -                  | -                                   | Perceptual                          | Perceptual                                | 2                       |              |             |              |             |              |                           | 2                |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from fall 2016; allocated to 4th year   |
|                    |                                     | Computing<br>Wireless               | Computing Wireless                        |                         |              |             |              |             |              |                           |                  |          |   | , ,                                      | , , , ,  | <u> </u>  | · · · · · · · · · · · · · · · · · · ·   |
| -                  | -                                   | Communications Network              | Communications Network                    | 2                       |              |             |              |             |              |                           | 2                |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from fall 2016; allocated to 4th year   |
| -                  | -                                   | Digital Imaging                     | Digital Imaging                           | 2                       |              |             |              |             |              |                           | 2                |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from fall 2016; allocated to 4th year   |
|                    |                                     | Theory of                           |   |                         |              |             |              |             |              |                           | 2                |          | X   | X  | X  | X   | * course cancelled from fall 2014.  |
| -                  | =                                   | Computer Software                   | -   |                         |              |             |              |             |              |                           | ±                |          | Λ   | Λ  | Λ  | Λ   | Course cancened from rail 2014.   |
| -                  | -                                   | Information<br>Retrieval            | Information<br>Retrieval                  | 2                       |              |             |              |             |              |                           | 2                |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from fall 2016; allocated to 4th year   |
| -                  | -                                   | Digital System<br>Design            | Digital System<br>Design                  | 2                       |              |             |              |             |              |                           | 4 2 second- half |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * this course allocated the second-half fall semester of the 4th year.  * new course is available from fall 2016; allocated to 4th year |
| -                  | -                                   | Advanced<br>Intelligent Software    | Advanced<br>Intelligent Software          | 2                       |              |             |              |             |              |                           | 2                |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from fall 2016; allocated to 4th year   |
| -                  | -                                   | Sound and<br>Perception             | -   |                         |              |             |              |             |              |                           | 2                |          | X   | X  | X  | X   | * course cancelled from fall 2014.  |
| -                  | -                                   | Analysis of<br>Networked Systems    | Analysis of<br>Networked Systems          | 2                       |              |             |              |             |              |                           | 2                |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from fall 2016; allocated to 4th year   |
| -                  | -                                   | -                                   | Cloud Systems                             | 2                       |              |             |              |             |              |                           | 2                |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from fall 2016; allocated to 4th year   |
| -                  | -                                   | -                                   | Advanced Wireless<br>Access               | 2                       |              |             |              |             |              |                           | 2                |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from fall 2016; allocated to 4th year   |
| -                  | -                                   | -                                   | Algorithms in<br>Computational<br>Biology | 2                       |              |             |              |             |              |                           | 2                |          | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from fall 2016; allocated to 4th year   |
| Image Processing   | Image Processing                    | Image Processing                    | Image Processing                          | 2                       |              |             |              |             |              |                           |                  | 2        | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  |   |
| -                  | -                                   | Advanced Image<br>Information       | Advanced Image<br>Information             | 2                       |              |             |              |             |              |                           |                  | 2        | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from spring 2016; allocated to 4th year   |
| -                  | -                                   | Advanced<br>Information<br>Networks | Advanced<br>Information<br>Networks       | 2                       |              |             |              |             |              |                           |                  | 2        | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * course cancelled from spring 2017.  |
| -                  | -                                   | Reliable Software                   | Reliable Software                         | 2                       |              |             |              |             |              |                           |                  | 2        | O (elective)                                      | O (elective)                             | O (elective)   | O (elective)  | * new course is available from spring 2016; allocated to 4th year   |

| [A]   | [B]                                 | [C]  | [D]   |            | Numbe        | Number of class hours per week (* a 90-minute long class (per week) is shown as 2 (hours) in the table below)  Current Course Availability by Your Enrollment Yea |              |             |              |             |              |  |   |  |  |   |   |
|---|-------------------------------------|--|---|------------|--------------|---|--------------|-------------|--------------|-------------|--------------|--|---|--|--|---|---|
| Carriculum for Carriculum for Students Enrolled Students Enrolled | Carriculum for<br>Students Enrolled | Carriculum for<br>Students Enrolled                    | Number<br>of<br>credits                         | First year |              | Second year   |              | Third year  |              | Fourth year |              | O: available<br>X: not available<br>*: conditionally available<br>(see Note section) |   |  |  | Note  |   |
| in Fall 2010/ 2011  | in Fall 2012                        | in Fall 2013   | in Fall 2014/ 2015/<br>2016/ <b>2017</b>        |            | Fall<br>sem. | Spring sem.   | Fall<br>sem. | Spring sem. | Fall<br>sem. | Spring sem. | Fall<br>sem. | Spring sem.  | For students<br>enrolled in<br>Fall 2010/<br>2011 | For students<br>enrolled in<br>Fall 2012 | For students<br>enrolled in<br>Fall 2013 | For students<br>enrolled in<br>Fall 2014/<br>2015/ 2016 |   |
| -   | -                                   | Information Integration of Symbols and Patterns        | Information Integration of Symbols and Patterns | 2          |              |   |              |             |              |             |              | 2  | O (elective)                                      | O (elective)                             | <del>O (elective)</del>                  | O (elective)  | * course cancelled from spring 2017.  |
| -   | -                                   | Distributed<br>Embedded and<br>Real-Time<br>Processing | Distributed Embedded and Real-Time Processing   | 2          |              |   |              |             |              |             | 2            | 2  | O (elective)                                      | O (elective)                             | O (elective)                             | O (elective)  | * new course is available from spring 2016; allocated to 4th year  * originally allocated to spring semester of 4th year, but from spring 2017, CHANGED TO fall semester of 4th year. |
| -   | -                                   | -  | Business and<br>Global<br>Standardization       |            |              |   |              |             |              |             |              | 2  | O (elective)                                      | O (elective)                             | O (elective)                             | O (elective)  | * new course is available from spring 2016; allocated to 4th year   |
| -   | -                                   | Advanced<br>Computer                                   | Advanced<br>Computer                            | 2          |              |   |              |             |              |             |              | 2  | O (elective)                                      | O (elective)                             | O (elective)                             | O (elective)  | * new course is available from spring 2016; allocated to 4th year   |
| -   | -                                   | Advanced<br>Processor<br>Architecture                  | Processor Architecture                          | 2          |              |   |              |             |              |             |              | 2  | O (elective)                                      | O (elective)                             | O (elective)                             | O (elective)  | * new course is available from spring 2016; allocated to 4th year   |
| -   | -                                   | Wireless Signal<br>Processing                          | Wireless Signal<br>Processing                   | 2          |              |   |              |             |              |             |              | 2  | O (elective)                                      | O (elective)                             | O (elective)                             | O (elective)  | * new course is available from spring 2016; allocated to 4th year   |
| -   | -                                   | Software Quality<br>Assurance                          | Software Quality Assurance                      | 2          |              |   |              |             |              |             |              | 2  | O (elective)                                      | O (elective)                             | O (elective)                             | O (elective)  | * new course is available from spring 2016; allocated to 4th year   |
| -   |                                     | Computer Vision<br>and Pattern<br>Analysis             | Computer Vision<br>and Pattern<br>Analysis      | 2          |              |   |              |             |              |             |              | 2  | O (elective)                                      | O (elective)                             | O (elective)                             | O (elective)  | * new course is available from spring 2016; allocated to 4th year   |
| -   |                                     | Foundation for<br>Information Access<br>Evaluation     | <b>Evaluation</b>                               | 2          |              |   |              |             |              |             |              | 2  | O (elective)                                      | O (elective)                             | O (elective)                             | O (elective)  | * new course is available from spring 2016; allocated to 4th year   |
| -   | -                                   | -  | Pattern Recognition and Machine Learning        | 2          |              |   |              |             |              |             |              |  |   |  |  |   | * new course is available from spring 2016; allocated to 4th year   |
| -   | -                                   | -  | Data Mining                                     | 2          |              |   |              |             |              |             |              | 2  | O (elective)                                      | O (elective)                             | O (elective)                             | O (elective)  | * new course is available from spring 2017; allocated to 4th year   |