



Form no. (11B): **Knowledge and skills matrix for the Software Engineering program**

Program content	Knowledge	Intellectual skills	Professional skills	General skills
LH130 ESP0	–	I5	P13, P21	G1, G4, G6
LH135 ESP-I	–	I5	P13, P21	G1, G4, G6
LH136 ESP-II	–	I5	P13, P21	G1, G4, G6
NC233 Communication Skills	–	I5	P13, P21	G1, G2, G4, G6
Math 0	K13	I2	P8	G1, G3, G5
BA101 Calculus I	K13	I2	P8	G1, G3, G5
BA102 Calculus II	K13	I2	P8	G1, G3, G5
BA201 Calculus III	K13	I2	P8	G1, G3, G5
BA203 Probability and Statistics	K13	I2	P8	G1, G3, G5
BA204 Linear Algebra	K13	I2	P8	G1, G3, G5

<b>BA113 Physics</b>	<b>K6</b>	<b>I2</b>	<b>P1, P7</b>	<b>G1, G3</b>
<b>EC134 Fundamentals of Electricity and Electronics</b>	<b>K6</b>	<b>I2</b>	<b>P1, P7</b>	<b>G1, G6</b>
<b>AR115 Visual Studies</b>	<b>K3</b>	<b>I5</b>	<b>P6</b>	<b>G1, G6</b>
<b>CS111 Introduction to Computers</b>	<b>K1, K6</b>	<b>I1, I2</b>	<b>P1, P4</b>	<b>G1, G2, G7</b>
<b>CE216 Digital Logic Design</b>	<b>K1, K4, K6</b>	<b>I2, I11, I12</b>	<b>P1, I7</b>	<b>G1, G2, G3</b>
<b>CE243 Computer Architecture</b>	<b>K4, K5, K6, K11</b>	<b>I4, I12, I13</b>	<b>P1, P7</b>	<b>G1, G3</b>
<b>CS143 Introduction to Problem Solving and Programming</b>	<b>K1, K2, K3, K4</b>	<b>I1, I3, I10, I11</b>	<b>P2, P3</b>	<b>G1, G2, G7</b>
<b>CS243 Object-Oriented Programming</b>	<b>K2, K3, K4</b>	<b>I1, I3, I10, I11</b>	<b>P2, P3</b>	<b>G1, G2, G7</b>
<b>CS244 Advanced Programming Applications</b>	<b>K2, K3, K4</b>	<b>I1, I3, I10, I11, I12</b>	<b>P2, P3, P9</b>	<b>G1, G2, G7</b>
<b>CS345 Structure of Programming Languages</b>	<b>K10, K13, K18</b>	<b>I10, I11, I17</b>	<b>P15, P19</b>	<b>G1, G2, G7</b>
<b>CS433 Web Programming</b>	<b>K2, K10</b>	<b>I5, I10, I11</b>	<b>P2, P3, P6, P9</b>	<b>G1, G2, G7</b>
<b>CS343 Game Programming</b>	<b>K14, k16</b>	<b>I11, I12, I13, I16, I17</b>	<b>P12, P14</b>	<b>G1, G2, G7</b>
<b>CS212 Data Structures and Algorithms</b>	<b>K2, K4, K7</b>	<b>I3, I7, I10, I11, I12</b>	<b>P2, P3, P9</b>	<b>G1, G3, G7</b>
<b>CS312 Computing Algorithms</b>	<b>K14, K16</b>	<b>I11, I12, I13, I14, I15, I16, I17</b>	<b>P10, P12, P16, P20</b>	<b>G1, G7</b>

<b>CS311 Theory of Computation</b>	<b>K14, K16</b>	<b>I11, I12, I14, I15</b>	<b>P16, P20</b>	<b>G1, G3, G7</b>
<b>CS202 Discrete Structures</b>	<b>K13</b>	<b>I2</b>	<b>P8</b>	<b>G1, G3, G5</b>
<b>CS301 Numerical Methods</b>	<b>K12, K15, K20</b>	<b>I10, I12, I15</b>	<b>P10, P13, P17, P18</b>	<b>G1, G2, G3</b>
<b>IS373 Database systems</b>	<b>K2, K5</b>	<b>I4, I11, I12</b>	<b>P2, P4, P8,P9</b>	<b>G1, G3 ,G7</b>
<b>IS474 Advanced Database Systems</b>	<b>K14</b>	<b>I11, I16</b>	<b>P10, P14</b>	<b>G1, G3, G7, G8</b>
<b>CE231 Introduction to Networks</b>	<b>K4, K5, K6, K11</b>	<b>I4, I7, I11, I12</b>	<b>P7, P3</b>	<b>G1, G3, G7</b>
<b>CS321 Systems Programming</b>	<b>K18</b>	<b>I15, I16, I17</b>	<b>P14, P15</b>	<b>G1, G2, G7</b>
<b>CS322 Operating Systems</b>	<b>K5, K6, K10</b>	<b>I3, I7, I11</b>	<b>P5, P7</b>	<b>G1, G2, G3, G7</b>
<b>CS427 Embedded Systems Programming</b>	<b>K16</b>	<b>I11, I12, I13, I16, I17</b>	<b>P18, P20</b>	<b>G1, G2, G7</b>
<b>CS366 Introduction to Artificial Intelligence</b>	<b>K7, K4, K10</b>	<b>I5, I6, I10, I11</b>	<b>P2, P3, P5, P9</b>	<b>G1, G2, G3, G7, G8</b>
<b>IS461 Decision Support Systems</b>	<b>K13, K18</b>	<b>I13, I15, I17</b>	<b>P12, P13, P18, P20</b>	<b>G1, G6</b>
<b>CS452 Computer Graphics</b>	<b>K13, K16, K17</b>	<b>I11, I13, I14</b>	<b>P10, P14, P16</b>	<b>G1, G2, G3, G7</b>
<b>CS451 Human Computer Interaction</b>	<b>K16</b>	<b>I11, I12, I15, I17</b>	<b>P14, P20</b>	<b>G1, G7</b>

<b>CS421 Computer System Security</b>	<b>K16, K18</b>	<b>I10, I11, I12, I13</b>	<b>P12, P16, P18, P19</b>	<b>G1, G3, G5, G8</b>
<b>CS405 System Modeling &amp; Simulation</b>	<b>K14, K15, K19</b>	<b>I12, I14, I16, I19</b>	<b>P14, P19</b>	<b>G1, G5, G7</b>
<b>IS171 Introduction to Information systems</b>	<b>K1</b>	<b>I1, I2</b>	<b>P2, P3</b>	<b>G1, G3, G7</b>
<b>IS372 Information Systems Theory &amp; Practice</b>	<b>K13, K15</b>	<b>I10, I14, I15</b>	<b>P10, P12, P15, P19</b>	<b>G1, G3</b>
<b>IS391 Systems Analysis &amp; Design</b>	<b>K13, K15, K18, K19</b>	<b>I10, I14, I15, I18</b>	<b>P10, P12, P15, P19</b>	<b>G1, G3</b>
<b>SE291 Introduction to Software Engineering</b>	<b>K3, K5, K7, K11</b>	<b>I5, I6, I12, I13</b>	<b>P6</b>	<b>G1, G7</b>
<b>SE391 Project Management</b>	<b>K15, K19, K20</b>	<b>I12, I14, I18, I19</b>	<b>P13, P15, P20, P21</b>	<b>G1, G7</b>
<b>SE392 Software Requirements &amp; Specifications</b>	<b>K12, K15, K19, K21</b>	<b>I11, I12, I18, I19</b>	<b>P10, P13, P20, P21</b>	<b>G1, G7</b>
<b>SE393 Principle of Software Architecture</b>	<b>K12, K15, K17, K19, K22</b>	<b>I12, I14, I18</b>	<b>P16, P18, P20</b>	<b>G1, G7</b>
<b>SE491 Software Component Design</b>	<b>K12, K15, K19, K21</b>	<b>I10, I11, I12</b>	<b>P15, P16, P18, P20</b>	<b>G1, G3, G7</b>
<b>SE492 Software Verification</b>	<b>K12, K15, K17, K19</b>	<b>I11, I12</b>	<b>P17, P20</b>	<b>G1, G7</b>
<b>SE493 Software Quality Assurance</b>	<b>K12, K15, K17, K19, K20</b>	<b>I12</b>	<b>P17, P20</b>	<b>G1, G2, G3</b>

<b>SE494</b> <b>Formal methods in Software Engineering</b>				
<b>SE495</b> <b>Security in Software Engineering</b>	<b>K12, K16, K17, K18</b>	<b>I11, I12</b>	<b>P19, P20</b>	<b>G1, G2, G3</b>
<b>SE496</b> <b>Software Engineering Process</b>	<b>K12, K15, K17, K19, K20, K22</b>	<b>I10, I12, I14</b>	<b>P10, P13, P15, P17, P20</b>	<b>G1, G2, G3</b>
<b>NC272</b> <b>Fundamentals of Business</b>	<b>K8</b>	<b>I7</b>	<b>P2, P4</b>	<b>G1, G3</b>
<b>NC252</b> <b>Principles of Marketing</b>	<b>K8</b>	<b>I7</b>	<b>P2, P4</b>	<b>G1, G3</b>
<b>NC264</b> <b>Principle of Microeconomics</b>	<b>K8</b>	<b>I7</b>	<b>P2, P4</b>	<b>G1, G3, G5</b>
<b>NC273</b> <b>Global Business</b>	<b>K8</b>	<b>I7</b>	<b>P2, P4</b>	<b>G1, G3</b>
<b>NC282</b> <b>Financial Accounting</b>	<b>K8</b>	<b>I7</b>	<b>P2, P4</b>	<b>G1, G3, G5</b>
<b>CS481</b> <b>Computers &amp; Society</b>	<b>K9</b>	<b>I7, I8</b>	<b>P4, P5</b>	<b>G1, G2, G4, G6, G7</b>
<b>SE401</b> <b>Project I</b>	<b>K15, K16, K19</b>	<b>I13, I14, I17</b>	<b>P10, P11, P12, P13, P14, P19</b>	<b>G1 to G8</b>
<b>SE402</b> <b>Project II</b>	<b>K13, K16, K19</b>	<b>I15, I16, I18, I19</b>	<b>P10, P11, P12, P13, P14, P19</b>	<b>G1 to G8</b>

**Program Manager:**

**Head of Department:**