SYLLABUS: **MTH 05 Elementary Algebra** (0 credits, 6 hours)

TEXT: Lecture Notes for MTH 05, by Andrew McInerney (<http://fsw01.bcc.cuny.edu/mathdepartment/Courses/Math/MTH05/05text0916a.pdf>)

PREREQUISITE: MTH 01 or equivalent and RDL 01 if required. CO-REQUISITE: RDL 02 if required

**Learning Objectives:** Proficiency in operations with signed numbers, and in the solution and graphical representation of linear equations. Proficiency in polynomial operations, factoring, and the solution and graphical representation of quadratic equations. Proficiency in operations involving integer exponents and the manipulation of radical expressions.

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| **Section / Topic Exercises** | | |
| **Preparing for Algebra (12 hours)** | | |
| I.1 | A Review of Fractions | p.4 1--5 p.6 1--4 p.9 1--5 p.14 1--6  p.16 1--6 |
| 2.1 | Signed Numbers |  |
| 2.2 | Graphing signed numbers |  |
| 2.3  2.4 | Adding and subtracting signed numbers  Multiplying and dividing signed numbers | p.28 1--15  p.31 1--6 |
| 2.5  3.1  3.2  3.3  3.4 | Exponents and roots with signed numbers  The order of operations  Algebraic expressions  Evaluating algebraic expressions  Translating algebraic expressions | p.32 1--5  p.39 1--8  p.43 1--10  p.46 1—8 |
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| **Linear statements in one variable (12 hours)** | | |
| 4.1 | Algebraic statements and solutions | p.55 1--15 |
| 4.2 | Solving linear equations | p.67 1—12, 11—16 (note numbering) |
| 4.3 | “Solving” literal equations | p.71 1—5 |
| 4.4 | Solving linear inequalities | p.82 1—6 |
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| **Linear statements in two variables (12 hours)** | | |
| 5.1 | Solving linear equations in two variables | p.94 1—8 |
| 5.2 | Slope and the geometry of lines | p.114 1—11 |
| 5.3 | Solving linear inequalities in two variables | p.124 1—6 |
| 5.4 | Solving systems of linear equations | p.135 1—8 |
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| **Polynomials (8 hours)** | | |
| 6.1 | Introduction to polynomials | p.143 1—8 |
| 6.2 | Adding and subtracting polynomials | p.148 1—7 |
| 6.3 | Properties of exponents | p.155 1—8 |
| 6.4 | Scientific notation | p.159 1—12 |
| 6.5 | Multiplying Polynomials | p.164 1—12 |
| 6.6 | Dividing Polynomials (by Monomials only) | p.167 1—5 |
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| **Factoring (10 hours)** | | |
| 7.1 | An Introduction to Factoring |  |
| 7.2 | “Factoring out” the GCF | p.176 1—6 |
| 7.3 | Differences of squares | p.179 1—14 |
| 7.4 | Quadratic trinomials I. Monic trinomials | p.184 1—15 |
| 7.5  7.6 | Quadratic trinomials II. The ac-method  Factoring by grouping | p.191 1--10  p.195 1—6 |
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| **Radicals expressions (8 hours)** | | |
| 8.1 | Quadratic equations |  |
| 8.2 | Radical expressions | p.209 1—15 |
| 8.3 | Introduction to complex numbers | p.213 1—6 |
| 8.4 | Arithmetic of radical expressions | p.218 1—16 |
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| **Quadratic Functions (10 hours)** | | |
| 9.1 | Solving Quadratic Equations I. | p.228 1—11 |
| 9.2 | Solving quadratic equations II. Completing the square | p.234 1—10 |
| 9.3  9.4  9.5  9.6 | Solving quadratic equations III. The quadratic formula  Solving quadratic equations IV. Factoring  Summary and applications  Quadratic equation in two variables and parabolas | p.239 1--10  p.242 1--10  p.248 1--19  p.255 1—6 |

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