

NCCC Mathematics Sequence and Placement Chart

STEM Path

MAT 023 – Introductory Algebra I & II

STEM Majors only
 Unsuccessful with All Waivers
 Unsuccessful with placement test

MAT 108 – Math for Childhood Education I

MAT 003 or MAT023
 Algebra Accuplacer Score of 76 or higher (Jan '16 or earlier)
 Regents Algebra Exam (2005 or later) of 75 or higher
 Regents Geometry Exam (2005 or later) of 70 or higher

MAT 109* – Math for Childhood Education II

MAT 108

MAT 125* – Applied Calculus I

MAT 111 or MAT 116
 Regents Algebra 2 Exam (2005 or later) of 70 or higher

MAT 110* – Intermediate Algebra

MAT 003 or MAT 023
 Algebra Accuplacer Score of 76 or higher (Jan '16 or earlier)
 Regents Algebra Exam (2005 or later) of 75 or higher

MAT 111* – Advanced Algebra & Trigonometry

MAT 110
 Regents Geometry Exam (2005 or later) of 70 or higher

MAT 116* – Pre-Calculus

MAT 111
 Regents Algebra 2 Exam (2005 or later) of 70 or higher

MAT 120* – Calculus and Analytic Geometry I

MAT 116
 High School Pre-Calculus Course
 Grade of 65 or higher

Non-STEM Path

MAT 046 – Mathematical Reasoning

Non-STEM Majors only
 Unsuccessful with All Waivers
 Unsuccessful with Placement Test

MAT 012 – Foundational Algebra

Non-STEM Majors only
 Unsuccessful with All Waivers
 Unsuccessful with Placement Test

-MAT 023 may be used as a prerequisite for students who changed programs

MAT 106* – Contemporary Math

MAT 002 or MAT 012 or MAT003 or MAT023 or MAT 046
 Algebra Accuplacer Score 57 or higher (Jan '16 or earlier)

MAT 104* – Math with Business Applications

MAT 002 or MAT 012 or MAT003 or MAT023 or MAT 046
 Algebra Accuplacer Score 57 or higher (Jan '16 or earlier)

MAT 164* – Intro to Statistics

MAT 046
 MAT 106
 MAT 110
 Algebra Accuplacer Score 76 or higher (Jan '16 or earlier)

* Indicates a SUNY General Education Course

Note: Advisors can utilize the Student Self-Test to help determine placement

NCCC Mathematics Course Sequence by Pathway

Calculus	Computer Science	Business Calculus	Business Math	Childhood Edu	Statistics	
MAT 023	MAT 023	MAT 023	MAT 012, 023 or 046	MAT 023	MAT 046	
MAT 110*	MAT 110*	MAT 110*		MAT 108	MAT 164*	
MAT 111*	MAT 111*	MAT 111*+	MAT 104*	MAT 109*	OR	
MAT 116*	MAT 116*	MAT 164*+		Liberal Arts	MAT 046, 012 ⁺ , or 023 ⁺	
MAT 120*	MAT 120*	MAT 125*		MAT 023	↓ MAT 106*	↓ MAT 023
MAT 121*	MAT 230*+			MAT 110*	MAT 164*	MAT 110*
MAT 222*	MAT 121*+				MAT 164*	
MAT 223*						

*These Courses meet the SUNY General Education requirements for Mathematics

+ These Courses can be used to meet pre-requisite if student has changed major.

⊕ There Courses can be taken concurrently in the sequence

Mathematics Transfer Courses

- In order to see if a course(s) is transferable, type “Transfer Guide” into the NCCC Search Bar and click on the “NCCC Transfer Credit Policies & Procedures link. Then click on the link under “Resources” on the right. Follow the directions to check course equivalent at NCCC from a different College or University. (<http://niagaracc.suny.edu/transfer/>)
- To check how an NCCC course will transfer, contact the transfer institution or search for a Transfer Equivalency chart on their website.



STEM Math Student Self-Placement Test

Students sometimes are concerned about which math course to choose. These questions will help you make that choice. If you can do most of the questions listed under a course you will probably want to register for the next course. **You MUST mark that result in the recommendation space.** If you are unable to do any of these problems you MUST mark the recommendation space with "NONE".

Student Name:	Date:
Student ID:	Course Recommendation: MAT _____

MAT 023 Introductory Algebra I & II

- Simplify: $a^2 + 4b + 2b^2 - b$
- Simplify: $\left(\frac{3x^4}{2y}\right)^3$
- Solve for x : $5(4+x) = 3(3x-1) - 9$
- Give the answer in lowest terms:
 $\frac{a^2 - 9a + 14}{a - 2} \cdot \frac{a^2 - 4a - 21}{(a - 7)^2}$
- Solve for y : $A = 2x + \frac{1}{2}y$
- Multiply: $(x-3)(x+2)$
- Evaluate: $8 \div [-3 + 6 - (2 \cdot 3 - 1)]$
- Simplify: $\sqrt{128}$
- Give answer in lowest terms:
 $\frac{6x+3}{2y} + \frac{x-5}{2y}$
- Subtract $2x-3$ from $4x^2-6x+7$

Doing OK?...CONTINUE; If not...STOP

MAT 110 Intermediate Algebra

- Simplify: $\frac{(3ab^4)^{-2}(18a^4b^{-2})}{(2a^{-3}b^0)(a^{-5}b^4)^3}$
- Simplify: $\sqrt{12x^4y^5}$
- Solve: $\frac{x}{3} + 1 = \frac{x}{2}$
- Solve using the quadratic formula:
 $3x^2 + 5x + 1 = 0$
- Solve the system of equations:
 $2x - 7y = -3$
 $x = 3y$
- Rationalize the denominator: $\frac{3}{\sqrt{5}-2}$
- Solve for x : $3\sqrt{x-1} = 12$
- Simplify: $\sqrt{75} - 2\sqrt{32} + 4\sqrt{12}$
- Solve for x : $2x - 1 > 4$
- Multiply: $(3x-1)(x^2-3x-7)$

Doing OK?...CONTINUE; If not...STOP

MAT 111 Advanced Algebra & Trig

- Solve for all values of from 0 to 360 degrees:
 - $\tan x = 1$
 - $\cos x = -\frac{\sqrt{3}}{2}$
 - $2\sin^2 x - 5\sin x - 3 = 0$
- Complete the following trig identities:
 - $\sin^2 x + \cos^2 x =$
 - $\frac{\cos x}{\sin x} =$

3. Verify: $\tan^2 x + \sin^2 x + \cos^2 x = \sec^2 x$

4. Solve for :

a. $\log_2(2x+1)=3$

b. $\log_5 125 = x$

5. Write in logarithmic form: $4^{\frac{1}{2}} = 2$

6. Is $x^2 + y^2 = 4$ the equation of a parabola, circle or an ellipse?

Doing OK?...CONTINUE; If not....STOP

MAT 116 Precalculus Mathematics

1. Express in simplest form: $\ln e^{4.36}$

2. Given $f(x)=3x-2$; $g(x)=x^2$ find:

a. $f(2)$

b. $g(f(x))$

c. $f^{-1}(x)$

3. State the domain and range for:

$$f(x) = \sqrt{x-5}$$

4. Evaluate: $|-12|-2|4|$

5. Find all the rational zeros: (Hint: Use synthetic division) $P(x) = 2x^3 + 7x^2 + 2x - 3$

6. Find the equation of the line perpendicular to $2x - 4y = 6$ passing through $(0, -1)$.

7. Multiply: $(3i + \sqrt{2})(6 - i\sqrt{2})$

8. Solve the quadratic inequality:
 $x^2 - 2x - 3 \leq 0$

ANSWER KEY

MAT 023: 1. $a^2 + 3b + 2b^2$ 2. $\frac{27x^{12}}{8y^3}$ 3. $x=8$ 4. $a+3$ 5. $2A-4x$

6. $x^2 - x - 6$ 7. -4 8. $8\sqrt{2}$ 9. $\frac{7x-2}{2y}$ 10. $4x^2 - 8x + 10$

MAT 110: 1. $\frac{a^{20}}{b^{22}}$ 2. $2x^2y^2\sqrt{3y}$ 3. $x=6$ 4. $\frac{-5 \pm \sqrt{13}}{6}$ 5. $x=9, y=3$

6. $3\sqrt{5}+6$ 7. $x=17$ 8. $13\sqrt{3}-8\sqrt{2}$ 9. $x > \frac{5}{2}$ 10. $3x^3 - 10x^2 - 18x + 7$

MAT 111: 1. a) $45^\circ, 225^\circ$ b) $150^\circ, 210^\circ$ c) $210^\circ, 330^\circ$ 2. a) 1 b) $\cot x$

3. $\tan^2 x + 1 = \sec^2 x$ 4. a) $x = \frac{7}{2}$ b) $x=3$ 5. $\log_4 2 = \frac{1}{2}$ 6. circle

MAT 116: 1. 4.36 2. a) 4 b) $9x^2 - 12x + 4$ c) $\frac{x+2}{3}$ 3. Domain $[5, \infty)$; Range $[0, \infty)$

4. 4 5. $\frac{1}{2}, -1, -3$ 6. $y = -2x - 1$ 7. $9\sqrt{2} + 16i$ 8. $[-1, 3]$