

LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

CURRICULUM CHANGE

1. **Type of change:** Change in requirements for the degree

2. **From:**

Requirements for the Computer Science B.A. degree (43 - 44 credits):

There are eleven required courses:

4 hours, 4 credits	MAT 175 Calculus I
4 hours, 4 credits	MAT 176 Calculus II
4 hours, 4 credits	MAT 226 Calculus III
4 hours, 4 credits	MAT 313 Linear Algebra
4 hours, 4 credits	CMP 230 Programming Methods I
4 hours, 4 credits	CMP 232 Elementary Discrete Structures & Applications to Computer Science
4 hours, 4 credits	CMP 326 Programming Methods II
4 hours, 4 credits	CMP 334 Computer Organization
4 hours, 4 credits	CMP 338 Data Structures
4 hours, 4 credits	CMP 339 Programming Languages <u>or</u>
	CMP 426 Operating Systems

one advanced (300 or 400 level) CMP elective

NOTES:

1. A minor is also required.
2. All students, particularly those considering graduate work, are advised to take more upper level computer science courses. (The list above is only the minimum required for graduation.)
3. For departmental honors, see one of the advisors in the Department of Mathematics and Computer Science

3. **To:**

Requirements for the Computer Science B.A. degree (43 - 44 credits):

There are eleven required courses:

MAT 175 Calculus I, 4 hours, 4 credits
MAT 176 Calculus II, 4 hours, 4 credits
MAT 313 Linear Algebra, 4 hours, 4 credits
CMP 230 Programming Methods I, 4 hours, 4 credits
CMP 232 Elementary Discrete Structures & Applications to Computer Science, 4 hours, 4 credits
CMP 326 Programming Methods II, 4 hours, 4 credits
CMP 334 Computer Organization, 4 hours, 4 credits
CMP 338 Data Structures, 4 hours, 4 credits
CMP 339 Programming Languages or CMP 426 Operating Systems, 4 hours, 4 credits
two advanced (300 or 400 level) CMP electives (MAT 226 can be used as one of these electives)

NOTES:

1. A minor is also required.
2. All students, particularly those considering graduate work, are advised to take more upper level computer science courses. (The list above is only the minimum required for graduation.)
3. For departmental honors, see one of the advisors in the Department of Mathematics and Computer Science

4. Rationale:

While MAT 226 is important for some Computer Science fields, there are others for which it is not that useful. With this change, students can take a different Computer Science elective instead of MAT 226, depending on the student's interests.

5. **Date of departmental approval:** May 3, 2010

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DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

CURRICULUM CHANGE

1. **Type of change:** Change in requirements for the degree

2. **From:**

Requirements for the Computer Science B.S. degree (56 - 60 credits):

1. There are fifteen required courses:

4 hours, 4 credits	MAT 175 Calculus I
4 hours, 4 credits	MAT 176 Calculus II
4 hours, 4 credits	MAT 226 Calculus III
4 hours, 4 credits	MAT 313 Linear Algebra
4 hours, 4 credits	CMP 230 Programming Methods I
4 hours, 4 credits	CMP 232 Elementary Discrete Structures & Applications to Computer Science
4 hours, 4 credits	CMP 326 Programming Methods II
4 hours, 4 credits	CMP 334 Computer Organization
4 hours, 4 credits	CMP 338 Data Structures
4 hours, 4 credits	CMP 339 Programming Languages
4 hours, 4 credits	CMP 426 Operating Systems

three advanced (300 or 400 level) CMP courses ,(PHY 305 Digital Electronics, 2 hrs. lecture, 2 hrs. lab, 3 credits, can be substituted for one of these courses)
one advanced (300 or 400 level) MAT course, not including MAT 300,301 or 348 (CMP 332 can be used for this course)

2. A minor is not required.

3. **To:**

Requirements for the Computer Science B.S. degree (56 - 60 credits):

There are fifteen required courses:

MAT 175 Calculus I, 4 hours, 4 credits
MAT 176 Calculus II, 4 hours, 4 credits
MAT 313 Linear Algebra, 4 hours, 4 credits
CMP 230 Programming Methods I , 4 hours, 4 credits
CMP 232 Elementary Discrete Structures & Applications to Computer Science, 4 hours, 4 credits
CMP 326 Programming Methods II, 4 hours, 4 credits
CMP 334 Computer Organization, 4 hours, 4 credits
CMP 338 Data Structures, 4 hours, 4 credits
CMP 339 Programming Languages, 4 hours, 4 credits
CMP 426 Operating Systems, 4 hours, 4 credits

four advanced (300 or 400 level) CMP courses ,(MAT 226 Vector Calculus 4 hours, 4 credits or PHY 305 Digital Electronics, 2 hrs. lecture, 2 hrs. lab, 3 credits, can be substituted for one of these courses)

one advanced (300 or 400 level) MAT course, not including MAT 300,301 or 348 (CMP 332 or CMP 416 can be used for this course)

A minor is not required.

4. Rationale:

a) While MAT 226 is important for some Computer Science fields, there are others for which it is not that useful. With this change, students can take a different Computer Science elective instead of MAT 226, depending on the student's interests.

b) CMP 416, while technically a computer course, involves a lot of theoretical mathematics and is an appropriate course to use for the upper level mathematics requirement for Computer Science majors.

5. Date of departmental approval: May 3, 2010

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CURRICULUM CHANGE

1. **Type of change:** Change in requirements for the degree

2. **From:**

Requirements for the Computer Information Systems B.S. degree (56 - 58 credits) :

In Computer Science: Required Courses (17 credits):

CIS 166 - Computer Programming for Information Processing, 4 hours, 4 credits
CIS 211 - Computer Information Systems, 4 hours, 4 credits
CIS 212 - Microcomputer Architecture, 4 hours, 3 credits
CIS 244 - Introduction to Database Management, 4 hours, 3 credits
CIS 331 – Network Introduction, 4 hours, 3 credits

In Computer Science: Elective Courses (9 - 11 credits):

Three additional courses chosen from the 200 - level (or higher) CIS courses or from CGI 221, CGI 321, CGI 421 and CMP 326. One of the courses must be a 300 (or 400) level CIS course.

In Mathematics: Required Courses (15 credits):

MAT 132 - Basic Concepts of Probability and Statistics, 4 hours, 4 credits
MAT 174 - Elements of Calculus, 4 hours, 4 credits
MAT 301 - Applied Statistics and Computer Analysis, 4 hours, 3 credits
MAT 348 - Mathematical Methods for Management, 4 hours, 4 credits

In Economics: Required Courses (9 credits):

ECO 166 - Fundamentals of Economics, 3 hours, 3 credits
ECO 167 - Economic Analysis, 3 hours, 3 credits
ACC 185 - Introduction to Accounting for Non-Accounting Majors, 3 hours, 3 credits

Further Electives (6 credits):

Students must choose 2 courses from:

One additional 200 level (or higher) CIS course , 3 credits

PHI 221: Ethical Issues in Computing and Technology, 3 hours, 3 credits

POL 299: Law, Computers and the Internet: The Politics of Information Technology, 3 hrs, 3 crs

NOTES:

1. No minor is required.
2. Students considering graduate work should take MAT 175 -176 instead of MAT 174.
- 3) For departmental honors, see one of the advisors in the Department of Mathematics and Computer Science

3. To:**Requirements for the Computer Information Systems B.S. degree (56 - 58 credits) :****In Computer Science: Required Courses (20 credits):**

CIS 166 - Computer Programming for Information Processing, 4 hours, 4 credits
CIS 211 - Computer Information Systems, 4 hours, 4 credits
CIS 212 - Microcomputer Architecture, 4 hours, 3 credits
CIS 244 - Introduction to Database Management, 4 hours, 3 credits
CIS 331 – Network Introduction, 4 hours, 3 credits
CIS 344 - Database Design and Programming, 4 hours, 3 credits

In Computer Science: Elective Courses (6 - 8 credits):

Two additional courses chosen from the 200 - level (or higher) CIS courses or from CGI 221, CGI 321, CGI 421 and CMP 326. One of the courses must be a 300 (or 400) level CIS course.

In Mathematics: Required Courses (15 credits):

MAT 132 - Basic Concepts of Probability and Statistics, 4 hours, 4 credits
MAT 174 - Elements of Calculus, 4 hours, 4 credits
MAT 301 - Applied Statistics and Computer Analysis, 4 hours, 3 credits
MAT 348 - Mathematical Methods for Management, 4 hours, 4 credits

In Economics: Required Courses (9 credits):

ECO 166 - Fundamentals of Economics, 3 hours, 3 credits
ECO 167 - Economic Analysis, 3 hours, 3 credits
ACC 185 - Introduction to Accounting for Non-Accounting Majors, 3 hours, 3 credits

Further Electives (6 credits):

Students must choose 2 courses from:

One additional 200 level (or higher) CIS course , 3 credits
PHI 221: Ethical Issues in Computing and Technology, 3 hours, 3 credits
POL 299: Law, Computers and the Internet: The Politics of Information Technology, 3 hrs, 3 crs

NOTES:

1. No minor is required.
2. Students considering graduate work should take MAT 175 -176 instead of MAT 174.
- 3) For departmental honors, see one of the advisors in the Department of Mathematics and Computer Science

4. **Rationale:**

Database management and design is a very important subfield of computer applications. With this change we are now requiring students to have a 2 semester sequence in this area.

5. **Date of departmental approval:** May 3, 2010

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CURRICULUM CHANGE

1. **Type of change:** Change in number and description

2. **From:**

CIS 246: E-Commerce, 4 hours (2 lecture, 2 lab) 3 credits

Introduction to electronic commerce on the Internet: Designing an e-commerce site including web page content and development, site marketing and advertisement, legal and security considerations, shopping cart management, credit card and other debit transactions.

PREREQ: CIS 211 and CIS 166

3. **To:**

CIS 346: E-Commerce. 4 hours (2 lecture, 2 lab), 3 credits

Introduction to electronic commerce on the Internet: Designing an e-commerce site including web Server installation, configuration, and tuning; web page content and development, site marketing and advertisement, legal and security considerations, shopping cart management, credit card and other debit transactions.

PREREQ: CIS 211 and CIS 166 .

4. **Rationale:**

The course has been offered very successfully for 2 years. We have come to realize that there is some more material that can and should be added to the course. With the additional material and with a 200 level course as a prerequisite, a 300 level number is appropriate.

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CURRICULUM CHANGE

1. **Type of change:** Change in description

2. **From:**

MAT 176: Calculus II. 4 hours, 4 credits.

Inverse functions; logarithmic and exponential functions; integration of functions; and applications of the definite integral, including area, volume, and arc length.

PREREQ: A grade of C or better in MAT 175.

COREQ: MAT 156

3. **To:**

MAT 176: Calculus II. 4 hours, 4 credits.

Riemann sums; logarithmic and exponential functions; integration of functions; applications of the definite integral, including area, volume, and arc length; infinite series and power series in one variable.

PREREQ: A grade of C or better in MAT 175.

COREQ: MAT 156

4. **Rationale:**

The new description is more reflective of what is done in this course

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CURRICULUM CHANGE

1. **Type of change:** Change in title and description

2. **From:**

MAT 226: Intermediate Calculus I. 4 hours, 4 credits.

Vectors in two and three dimensions, equations of lines and planes, functions of several variables, partial differentiation, directional derivatives, and multiple integration; line integrals; and infinite series and power series in one variable.

PREREQ: A grade of C or better in MAT 176.

3. **To:**

MAT 226: Vector Calculus. 4 hours, 4 credits.

Vectors in two and three dimensions, equations of lines and planes, functions of several variables, partial differentiation, directional derivatives, gradients, optimization with Lagrange multipliers, multiple integration, line integrals and vector fields

PREREQ: A grade of C or better in MAT 176.

4. **Rationale:**

a) The new title is a more standard title for this type of course.

b) The new description is more reflective of what is covered in this course.

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CURRICULUM CHANGE

1. **Type of change:** Change in title

2. **From:**

MAT 227: Intermediate Calculus II. 4 hours, 4 credits.

A continuation of MAT 226. Taylor expansion in several variables, maximum and minimum problems, line integrals, Green's theorem, and introduction to differential equations.

PREREQ: MAT 226.

3. **To:**

MAT 227: Intermediate Vector Calculus . 4 hours, 4 credits.

A continuation of MAT 226. Taylor expansion in several variables, maximum and minimum problems, line integrals, Green's theorem, and introduction to differential equations.

PREREQ: MAT 226.

4. **Rationale:**

The new title is a more standard title for this type of course.

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