

QUEENSBOROUGH COMMUNITY COLLEGE  
CITY UNIVERSITY OF NEW YORK  
ACADEMIC SENATE REPORT

**ROM:** Frank Cotty, Chair, Committee on Curriculum  
**TO:** Devin McKay, Secretary, Academic Senate Steering Committee  
**CC:** P. Pecorino, Dean K. Steele, College Archives (C.Williams)  
**DATE:** October 17, 2007  
**SUBJECT:** Monthly Report for November, 2007

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The Curriculum Committee recommends the following for adoption by the Academic Senate:

**NEW COURSES**

Department of Mechanical Engineering and Design Drafting

**MT 369 Computer Applications in Engineering Technology**  
**2 class hours and 3 laboratory hours, 3 credits**  
**Perquisites: MT-161 or MT-488**

**Course description:** Essentials of applied computer technology used in the industrial environment. Students will advance their engineering skills by using state-of-the-art CAD/CAM MASTERCAM software to generate coding for CNC Machining and Turning Centers. Topics include creation of part geometry, stock sizing, material assignment, tool path generation, tool selection, entry of machining parameters, verification via solid model animation software, and post processing to generate a word address part program.

**Rationale:** This course is needed to fulfill the computer applications requirement for students in both the MT and DD curriculums. It is especially required in the MT curriculum to maintain its ABET Accreditation.

**MT 491 Computer Controlled Manufacturing**  
**1 class hour and 3 laboratory hours. 2 credits**  
**Prerequisites: MT-161**

**Course description:** Instruction to the concepts and practices associated with the set up, operation, and programming of CNC Turning Centers and Wire EDM's (Electrical Discharge Machines). Emphasis will be placed on using a CNC machine to cut in a two and four axis environment. Students will prepare and cut parts on a Kia CNC Turning Center with Fanuc Controller and a Sodick 4 axis wire EDM machine during laboratory time.

**Rationale:** This course is needed to fulfill the electro-mechanical and manufacturing requirements for students in the MT curriculum. It is especially required in the MT curriculum to maintain its ABET Accreditation.

**MT 492: Introduction to Virtual Automation**  
**1 class hours and 3 laboratory hours. 2 credits**  
**Prerequisites: MT-161**

**Course description:** : A study of the principles and practices involved in conceiving, designing, producing and measuring products quickly and effectively, using the latest RP (Rapid Prototyping) methods and CMM (Coordinate Measuring Machines) technology. Students will learn Stereolithography Technology on a Z Corporation's 3D printer. Students will be instructed in the latest techniques in quality control and operate a Zeiss CNC controlled CMM.

**Rationale:** This course is needed to fulfill the design and manufacturing requirements for students in the MET Curriculum. It is especially required in the MT Curriculum to maintain its ABET Accreditation.

## **PROGRAM REVISIONS**

Department of Mechanical Engineering and Design Drafting

### **A.A.S. Degree Program In Architectural and Industrial Design:**

**Rationale:** Students in the Computerized Architectural and Industrial Design curriculum need to be proficient in the latest application software in their field. Mastercam is the leading PC based package used for both mechanical design and manufacturing. A thorough exposure to this important tool will be provided in MT-369. This course will replace MT-487. Electro-Mechanical Systems Design. After careful study it was determined that PH-101, Principles of Physics, provides CAID students with sufficient exposure to the same electrical principles covered in Mt-487. Replacing MT-487 with MT-369 will give our DD students the skills they need to compete for jobs and advance in today's industrial environment.

**DESIGN DRAFTING CURRICULUM**

SUMMARY OF CHANGES

Title:

Computerized Architectural and Industrial Design

New course:

MT-369-Computer Applications in Engineering Technology

Withdrawn course:

MT-487 Electro-Mechanical Systems Design

**FROM:** A.A.S. Degree Program in Computerized Architectural and Industrial Design

<b>GENERAL EDUCATION CORE REQUIREMENTS</b>		<b>Credits</b>
EN-101, 102	English Composition I, II.....	6
MA-114	College Algebra and Trigonometry for Technical Students.....	4
PH-101	Principles of Physics.....	4
SS- OR HI-	Electives in Social Sciences or History (HI-100 series).....	6
	<i>Sub-total</i>	20

**REQUIREMENTS FOR THE MAJOR**

MT-111	Technical Graphics.....	2
MT-122 or	Manufacturing Professes or	
MT-219	Surveying and Layouts.....	3
MT-124	Metallurgy and Materials.....	3
MT-212	Technical Descriptive Geometry.....	3
MT-341	Applied Mechanics.....	3
MT-345	Strength of Materials.....	3
MT-453	Piping Systems.....	3
MT-454	Fundamentals of HVAC Systems.....	2
MT-481	Architectural Design Fundamentals.....	3
MT-482	Structural Drafting and Design.....	3
MT-484	Construction Methods.....	3
[MT-487]	Electro-Mechanical Systems Design.....	3
MT-488	Computer-Aided Design Drafting (CADD).....	3
MT-489	Advanced Computer-Aided Design Drafting (ADCADD).....	3
	<i>Sub-Total</i>	40

**Total Credits Required for the Computerized Architectural and Industrial Design A.A.S. Degree Program..... 60**

**TO:** A.A.S. Degree Program in Computerized Architectural and Industrial Design

<b>GENERAL EDUCATION CORE REQUIREMENTS</b>		<b>Credits</b>
EN-101, 102	English Composition I, II.....	6
MA-114	College Algebra and Trigonometry for Technical Students.....	4
PH-101	Principles of Physics.....	4
SS- OR HI-	Electives in Social Sciences or History (HI-100 series).....	6
	<i>Sub-total</i>	20

**REQUIREMENTS FOR THE MAJOR**

MT-111	Technical Graphics.....	2
MT-122 or	Manufacturing Professes or	
MT-219	Surveying and Layouts.....	3
MT-124	Metallurgy and Materials.....	3
MT-212	Technical Descriptive Geometry.....	3
MT-341	Applied Mechanics.....	3
MT-345	Strength of Materials.....	3
<u>MT-369</u>	Computerized Applications in Engineering Technology.....	3
MT-453	Piping Systems.....	3
MT-454	Fundamentals of HVAC Systems.....	2
MT-481	Architectural Design Fundamentals.....	3
MT-482	Structural Drafting and Design.....	3
MT-484	Construction Methods.....	3
MT-488	Computer-Aided Design Drafting (CADD).....	3
MT-489	Advanced Computer-Aided Design Drafting (ADCADD).....	3
	<i>Sub-Total</i>	40
	<b>Total Credits Required for the Computerized</b>	
	<b>Architectural and Industrial Design A.A.S. Degree Program.....</b>	<b>60</b>

**A.A.S. Degree in Mechanical Engineering Technology**

**Rationale:** Students in the MT curriculum need to be proficient in the latest application software in their field. Mastercam is the leading PC based package used for both mechanical design and manufacturing. A thorough exposure to this important tool will be provided in MT-369. This course will replace MT-368, Computerized Laboratory Techniques in Mechanical Technology. Many of the topics covered in MT-368 such as Basic are dated or are available to our students in courses in other curriculums.

**MECHANICAL ENGINEERING TECHNOLOGY CURRICULUM**

SUMMARY OF CHANGES:

Title:

Mechanical Engineering Technology

New courses:

- MT-369, Computer Applications in Engineering Technology
- MT-491, Computer Integrated Manufacturing
- MT-492, Introduction to Virtual Automation

Withdrawn courses:

- MT-368, Computerized Laboratory Techniques in Mechanical Technology
- MT-487, Electro-Mechanical Systems Design
- MT-566, Electro-Mechanical Systems Design Laboratory

**FROM:** A.A.S. Degree Program in Mechanical Engineering Technology

<b>GENERAL EDUCATION CORE REQUIREMENTS</b>		<b>CREDITS</b>
EN-101, 102	English Composition I, II.....	6
MA-114	College Algebra and Trigonometry for Technical Students.....	4
MA-128	Calculus for Technical and Business Students.....	4

PH-201, 202	General Physics I, II.....	8
SS- OR HI-	Electives in Social Sciences or History (HI-100 series).....	6
	<i>Sub-total</i>	28

**REQUIREMENTS FOR THE MAJOR**

MT-111	Technical Graphics.....	2
MT-122	Manufacturing Professes.....	3
MT-124	Metallurgy and Materials.....	3
MT-125	Metallurgy Laboratory.....	1
MT-161	Fundamentals of Computer Numerical Control.....	3
MT-341	Applied Mechanics.....	3
MT-488	Computer-Aided Design Drafting (CADD).....	3
MT-345	Strength of Materials.....	3
MT-346	Strength of Materials Laboratory.....	1
[MT-368]	Computerized Laboratory Techniques in Mechanical Technology.....	3
[MT-487]	Electro-Mechanical Systems Design.....	3
[MT-566]	Electro-Mechanical Systems Design Laboratory.....	1
MT-513	Thermo Fluid Systems.....	3
MT-514	Thermo Fluid Systems Laboratory.....	1
MT-900	Cooperative Education/Design Projects.....	3
	<i>Sub-Total</i>	36
	<b>Total Credits Required for the Mechanical Engineering Technology A.A.S. Degree Program.....</b>	<b>64</b>

TO: A.A.S. Degree Program in Mechanical Engineering Technology

<b>GENERAL EDUCATION CORE REQUIREMENTS</b>		<b>CREDITS</b>
EN-101, 102	English Composition I, II.....	6
MA-114	College Algebra and Trigonometry for Technical Students.....	4
MA-128	Calculus for Technical and Business Students.....	4
PH-201, 202	General Physics I, II.....	8
SS- OR HI-	Electives in Social Sciences or History (HI-100 series).....	6
	<i>Sub-total</i>	28

**REQUIREMENTS FOR THE MAJOR**

MT-111	Technical Graphics.....	2
MT-122	Manufacturing Professes.....	3
MT-124	Metallurgy and Materials.....	3
MT-125	Metallurgy Laboratory.....	1
MT-161	Fundamentals of Computer Numerical Control.....	3
MT-341	Applied Mechanics.....	3
MT-488	Computer-Aided Design Drafting (CADD).....	3
MT-345	Strength of Materials.....	3
MT-346	Strength of Materials Laboratory.....	1
<u>MT-369</u>	Computer Applications in Engineering Technology.....	3
<u>MT-491</u>	Computer Integrated Manufacturing.....	2
<u>MT-492</u>	Introduction to Virtual Automation.....	2
MT-513	Thermo Fluid Systems.....	3
MT-514	Thermo Fluid Systems Laboratory.....	1
MT-900	Cooperative Education/Design Projects.....	3
	<i>Sub-Total</i>	36
	<b>Total Credits Required for the Mechanical Engineering Technology A.A.S. Degree Program.....</b>	<b>64</b>

## NEW PROGRAMS

Queensborough/John Jay Dual Degree Dual Degree Program: A.S. in Science for Forensics (QCC) and B.S. in Forensic Science (John Jay College of Criminal Justice of the City University of New York).

### **Rationale:**

Recent advances in chemistry, biology and computer science have had a great impact on forensics. DNA matching and microscale chemical experimentation have opened new horizons in fields such as forensic science and criminalistics. As a result a need to train existing and future professionals in these fields has created a new pool of jobs which is very likely to expand with time. An excerpt from the occupational outlook-bureau of labor standards for the year 2004 indicates that the jobs for the forensic science technicians are increasing nationwide both in the state and local government. The largest pool of candidates for these degrees must be drawn from the fields of science, technology, engineering and mathematics (STEM).

This program will offer students a broad-based and extensive science training that will prepare them to move into to a number of baccalaureate science programs, but will particularly prepare students wishing to transfer into John Jay College of Criminal Justice of the City University of New York in order to pursue B.S. degrees within any one of three possible concentrations within John Jay's B.S. degree program in Forensic Science: Criminalistics, Toxicology, and Molecular biology) The partnership for this degree program between Queensborough Community College and John Jay is strengthened by a Title V collaborative grant which was awarded to QCC and JJC in order to reduce attrition and increase graduation rates among Hispanic students in science, and increase the number of minorities in the current STEM workforce.

For students who decide to delay pursuit of the B.S., the strong foundation in mathematics and science will help them find work opportunities or to pursue other science majors. With the proposed two-year degree in the science of forensics at QCC, students will, meanwhile, be qualified to seek entry-level positions at various municipal, state, and federal public agencies, and to seek employment in the areas of DNA analysis, conducting tests on substances such as hair fiber, tissue, body fluids, and perform other methods of chemical investigation to analyze physical evidence at the crime scene.

**QCC/JJ DUAL DEGREE PROGRAM: A.S. IN SCIENCE FOR FORENSICS (QCC)  
AND B.S. IN FORENSIC SCIENCE (JOHN JAY COLLEGE OF CRIMINAL JUSTICE)**

**Program Requirements for the A.S. in Science for Forensics**

Queensborough Community College courses		Cr	John Jay equivalents (all courses meet JJ General Education requirements and first two year requirements for Forensic Science)	JJ cr.
<b>General Education Core Requirements</b>				
EN-101, 102	English Composition I, II	6	ENG 101, 102	6
SS-110, 211, 212, 310, 410, or 510	Anthropology, Macroeconomics, Microeconomics, Sociology, Political Science, <i>or</i> Psychology	3	ANT 101, ECO 101, 102, SOC 101, GOV 101, PSY 101	3
HI-110 or 111 or HI-112	Ancient Civilization <i>or</i> Medieval and Early Modern Western Civilization, <i>or</i> Modern Western Civilization	3	HIS 231 <i>or</i> HIS 232	3
SP-211	Speech Communication	3	SPE 113	3
BI-201, 202	General Biology I, II	8	BIO 103, 104	8
CH-151	General Chemistry I	4.5	CHM 103	5
MA-441	Analytic Geometry and Calculus I	4	MAT 241	3
<b>General Education Sub-total</b>		<b>31.5</b>		<b>34</b>
<b>Requirements for the Major</b>				
CH-152	General Chemistry II	4.5	CHM 104	5
CH-251, 252	Organic Chemistry I, II	10	CHM 201, 202	8
MA-442	Analytic Geometry and Calculus II	4	MAT 242	3
PH-411, 412, 413	Calculus Physics I, II, III	10	PHY 203, 204	8
<b>Requirements for the Major Sub-total</b>		<b>28.5</b>		<b>24</b>
<b>Total Requirements for the degree</b>		<b>60</b>		<b>55+ 5 blanket</b>

**Notes:**

- a) All QCC degree students must take two Writing Intensive courses (in addition to EN-101, 102).  
 b) Certain JJ courses receive more credits than QCC courses (CHM 103, 104); certain QCC courses receive more than John Jay courses (CH-251, 252; MA-441, 442; PH-411-413). This leaves an imbalance of five credits at QCC; at a minimum, students will receive 60 transfer credits toward the B.S. at John Jay.