



# Fueling the Long Island Economy:

The Regional Impact of Farmingdale State College

A Special Research Report From the Long Island Association, Inc.





## EXECUTIVE SUMMARY

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### Background

Long Island's institutions of higher education play a crucial economic role within the Long Island economy. They generate a steady stream of skilled workers for local businesses. They are also major economic entities whose expenditures contribute materially to regional economic activity. This report documents the economic impact of one such institution, Farmingdale State College, a campus of the State University of New York. It is one of a series of special research reports by the Long Island Association, focusing on issues of regional significance.

Pearl M. Kamer, Ph.D., Chief Economist of the Long Island Association, authored the report. Dr. Kamer currently serves on the Board of Economic Advisors to the New York State Assembly Ways and Means Committee. She also serves on the Board of Directors of the Broad Hollow Bioscience Park, located on the campus of Farmingdale State College, and on the Farmingdale State College Council.

Dr. Kamer received her Ph.D. and M.B.A. degrees from New York University. Dr. Kamer has taught at Hofstra, Adelphi, SUNY Stony Brook, New York University and Queens College. She is the author of two books, *Crisis in Urban Public Finance* and *The U.S. Economy in Crisis: Adjusting to the New Realities*.



## Principal Findings

- Farmingdale State College supports the regional economy by providing a steady stream of well-qualified employees to serve local businesses and industries. Moreover, its direct expenditures contribute materially to economic activity on Long Island.
- Farmingdale State College has a \$1.1 billion impact on the Long Island economy. That is, direct operating and capital expenditures of about \$506 million by FSC during the study period contributed almost \$1.1 billion to Long Island's output of goods and services, its gross metropolitan product. To put this number in perspective, the entire gross metropolitan product of Nassau and Suffolk Counties was an estimated \$137 billion in 2007.
- Direct spending by FSC during the study period also caused an increase in Long Island earnings estimated at more than \$354 million and created more than 10,000 jobs in a broad array of local industries.
- FSC's four schools – Arts and Sciences, Engineering Technologies, Health Sciences, and Business – enroll over 6,800 undergraduate students. As FSC has evolved into a four-year institution, it has granted proportionately more bachelor's degrees and proportionately fewer associate degrees. Applications to FSC have doubled in the past decade and admission to the college has become increasingly selective. Fewer than half of all applicants are currently offered admission. The high school average of incoming freshman is currently 86.6. The growing selectivity of FSC in admitting students and the outstanding academic achievements of those students is reflected in the fact that seven FSC students are currently applying for prestigious Fulbright Scholarship Awards.
- Farmingdale State College satisfies the workforce needs of local businesses

through its emphasis on the applied sciences and technology. FSC's B.S. degree program in Manufacturing Engineering Technology, which focuses on quality control and computer aided manufacturing, is the only such program in the region. It provides vital support to Long Island's technology-intensive manufacturing sector.

- Because today's growth industries are evolving from hybrid fields, FSC's academic programs are increasingly interdisciplinary, rather than entrenched within specific disciplines. For example, because drug discovery now involves advanced computer techniques, FSC's B.S. degree in Bioscience incorporates courses in both biotechnology and advanced computer techniques.
- As part of the learning process, FSC involves students in solving "real world" problems encountered by local businesses, government agencies, hospitals and community organizations. Student internships and clinical placements are an important part of this process. They give FSC students "hands on" experience in actual work situations and ensure that many of them will have well-paying jobs upon graduation. At the same time, they provide local businesses and institutions with the talent they need to thrive and grow.
- FSC faculty members keep abreast of the latest developments in their respective fields through their research publications and participation in professional conferences. They also regularly collaborate with industry representatives to ensure that their academic programs are current and responsive to the changing needs of business and industry. This enables Farmingdale faculty to respond quickly to advances in science and technology. The utilization of outside advisory committees composed of leaders in business, industry and the professions means that program and curriculum development at FSC is agile, dynamic and up-to-date.
- FSC has established several institutes that support economic development on Long Island and throughout New York State. These include the Institute for Research and Technology Transfer, which provides local companies with access to modern, cost-effective manufacturing systems, the Solar Energy Center, which encourages the utilization of photovoltaic energy systems, and the Office of Corporate and Professional Development, which provides customized training programs to meet the workforce needs of local businesses.
- FSC is expected to play a pivotal role in promoting future economic development on Long Island and in New York State. It is well positioned to leverage its location and academic standing to support the commercialization of new energy and bioscience technologies. With the development of well-configured laboratory research space for private companies in the on-campus Broad Hollow Bioscience Park, FSC can play a pivotal role in capturing young, fast-growing bioscience companies spun off by research institutions in the New York metropolitan region and elsewhere.
- As companies at the bioscience park mature, they will seek facilities in the surrounding community, motivating private developers to build additional bioscience facilities in the immediate community. This will validate and leverage New York State's past investments in the Broad Hollow Bioscience Park and in FSC's expanded academic bioscience programs. Eventually, FSC can be expected to develop its own intellectual bioscience property, thereby creating revenue for the college and the SUNY system.
- The Federal government is expected to make major investments in alternative energy sources. Teaching, research and development of alternative energy systems is and will continue to be a central function of the FSC faculty within the School of Engineering Technologies.

# Fueling the Long Island Economy: The Regional Impact of Farmingdale State College

A Special Research Report From the Long Island Association, Inc.

Prepared by Pearl M. Kamer, Ph.D.  
LIA Chief Economist

*Long Island's institutions of higher education play a crucial economic role within the Long Island economy. They generate a steady stream of skilled workers for local businesses. Their expenditures also contribute to Long Island's output of goods and services, its earnings and its employment base through the multiplier process. This study documents the economic impact of Farmingdale State College and demonstrates its positive influence on various sectors of the Long Island economy.*

## The Changing Long Island Economy

**Background.** Long Island's economy has reached a critical turning point. Long Island survived massive defense layoffs in the late 1980s and early 1990s when the cold war ended and Long Island's defense industry imploded. The defense industry retrenchment coincided with a steep national recession. As a result, Long Island lost more than 86,000 payroll jobs between 1990 and 1992. This was the worst job performance for the Nassau-Suffolk labor market in the post World War II period.

The loss of so many high-paying technology-intensive defense jobs accelerated the shift from a manufacturing to a service-based economy. It also ushered in a period of entrepreneurship that was unprecedented on Long Island. Laid off defense industry engineers and technicians used their technical skills to develop technology-intensive products geared to civilian markets. At the same time, Long Island's business sector matured and deepened in response to population and business growth during prior decades. In the new economic environment, business and professional services became key growth industries. As the knowledge-based economy grew, local colleges and universities expanded and introduced new academic programs to meet the needs of local businesses and institutions. As a result, a symbiotic relationship between the business and academic communities developed.

These initiatives resulted in the creation of a highly diverse economy on Long Island. Technology industries and technology-intensive manufacturing continued to flourish although the manufacturing sector as a whole contracted. The technology sector was complemented by a growing service sector anchored by high-end business and professional services. Job growth quickly accelerated and as a result, Long Island gained almost 118,000 payroll jobs between 1997 and 2000. This

was in sharp contrast to the massive job losses that occurred earlier in the decade. By 2000, just as the nation slipped into another recession, Long Island's unemployment rate bottomed out at 3.4 percent and its economic future seemed assured.

The Long Island economy emerged relatively unscathed from the 2000-01 national recession that followed the implosion of the technology bubble. However, while Long Island didn't lose many jobs during the recession, job growth seemed to falter during the ensuing recovery. By 2005, it had become clear that the nation's job growth was accelerating while Long Island's job gains were minimal. Although the Long Island economy remained relatively resilient to the current economic downturn, it again began to lose private sector jobs on a year-to-year basis by October 2008. This focused attention on some of Long Island's longer-term structural problems, its high taxes, the absence of affordable housing and accelerating losses of young workers, the so-called "brain drain". These structural imbalances had begun to take a toll on job growth.

### AVERAGE ANNUAL NET CHANGE IN PAYROLL JOBS ON LONG ISLAND, 1990-2008

Year	Net Change in Payroll Jobs*	Unemployment Rate (%)
1990	-11,900	4.0
1991	-49,300	6.4
1992	-25,000	7.7
1993	9,100	6.5
1994	16,800	5.7
1995	18,600	5.0
1996	8,100	4.2
1997	20,100	3.9
1998	27,400	3.2
1999	42,000	3.3
2000	28,400	3.4
2001	1,000	3.8
2002	-2,800	4.7
2003	7,200	4.8
2004	11,400	4.6
2005	5,800	4.2
2006	8,000	3.9
2007	15,600	3.7
November, 2008	-4,800	5.2

\*Compared with previous year.

Source: New York State Labor Department

## Dimensions of the Brain Drain

The decline in Long Island residents between ages 25 and 44 undercuts Long Island's principal competitive advantage for technology-intensive manufacturing and high-end business and professional services, namely the presence of a skilled, highly educated resident labor force. Moreover, the brain drain on Long Island has been every bit as severe as the much-publicized brain drain in many upstate New York counties, where the problem is not the absence of affordable housing but the absence of jobs. Long Island's loss of young people is also more severe than that of neighboring New York City.

## THE BRAIN DRAIN: CHANGE IN PERSONS AGE 25 THROUGH 44, 2000-2007

County	Net Change in Persons 25-44	% Change in Persons 25-44
<b>Nassau</b>	<b>-89,356</b>	<b>-23.2</b>
<b>Suffolk</b>	<b>-68,068</b>	<b>-15.4</b>
<b>Nassau-Suffolk</b>	<b>-157,424</b>	<b>-19.0</b>
<b>Nearby Counties/Cities</b>		
New York City	-59,017	-2.2
Westchester	-39,520	-14.1
Rockland	-11,851	-14.8
Dutchess	-8,846	-10.4
Bergen, NJ	-34,431	-12.7
Essex, NJ	-27,493	-11.1
Hudson, NJ	-7,780	-3.6
Middlesex, NJ	-10,082	-4.1
Fairfield, CT	-40,665	-14.9
<b>Upstate Counties</b>		
Albany	-6,133	-7.2
Broome	-6,166	-11.5
Cattaraugus	-2,755	-12.4
Cayuga	-2,644	-10.9
Chautauqua	-4,735	-12.9
Chemung	-3,614	-14.0
Clinton	-970	-4.0
Erie	-44,883	-16.6
Jefferson	543	-1.6
Madison	-2,322	-12.1
Monroe	-34,389	-15.9
Niagara	-9,177	-14.7
Oneida	-6,692	-10.1
Onondaga	-17,535	-13.3
Ontario	-2,967	-10.4
Oswego	-4,185	-11.8
Rensselaer	-3,258	-7.3
Saratoga	-538	-0.9
Schenectady	-4,178	-10.1
St. Lawrence	-3,092	-10.1
Steuben	-1,716	-6.4
Sullivan	-136	-0.7
Tompkins	-664	-2.6
Warren	1,258	7.0
Wayne	-5,068	-18.0
<b>United States</b>	<b>-1,642,781</b>	<b>-1.9</b>

Source: U.S. Census Bureau, 2000 Decennial Census and 2007 American Community Survey

Today, Long Island, New York State and the nation are faced with another recession, which threatens to be longer and deeper than anything we've seen since the Great Depression. If Long Island's economy is to survive this recession with minimal damage, Long Island's institutions of higher education will be called upon to produce a steady stream of graduates with the skills that will help local and New York State businesses cope with an increasingly challenging economic environment.

## Farmingdale State College as a Significant Economic Entity

Farmingdale State College clearly plays a critical role in educating the Long Island workforce and that of New York State. However, it is also a significant economic entity that contributes materially to economic activity on Long Island. FSC's direct operating and capital expenditures are injected into the Long Island economy and undergo several rounds of respending. Because of the multiplier or ripple effect, the ultimate economic impact of these expenditures is a multiple or the original expenditures.

This ripple effect can be estimated by applying an input-output model of the Long Island economy to FSC operating and capital spending. The Bureau of Economic Analysis of the U.S. Commerce Department has developed one such model, known as the Regional Input-Output Modeling System or RIMS II. For each major industry sector on Long Island, it depicts the industries from which inputs are purchased and to which outputs are sold. In effect, the model traces inter-industry linkages within the Long Island economy. It contains multipliers for output, earnings, and employment for the Long Island economy as a whole and for specific industry groups. The output multipliers show how much Long Island's output of goods and services, its gross metropolitan product, increases for each dollar of direct spending by FSC. The earnings multipliers show the increase in Long Island earnings for each dollar of direct spending by FSC. The employment multipliers show how many additional jobs are created on Long Island for each million dollars spent by FSC.



The Bureau of Economic Analysis periodically updates the RIMS II model. The latest update was released on September 9, 2008. The multipliers used in the following analysis reflect this update. They include 1997 national benchmark input-output data that were customized for Long Island by incorporating 2006 Nassau-Suffolk regional economic data. The multipliers cover 473 detailed industries.

## The Economic Impact of Operating Expenditures by FSC

The FSC operating budget consists of four major operational units: the state purpose budget, the Economic Opportunity Center, the residence halls and the summer program.

- The state purpose budget includes the President’s office, administration and finance, the academic division, student affairs, institutional advancement and development. It is the core budget of the College and is supported by a combination of tuition, fees and state tax support.
- The Economic Opportunity Center provides tuition free courses for economically and educationally underserved adult New York State residents. The State University of New York provides funding for this unit through the University Center for Academic and Workforce Development.
- The residence halls are a self-supporting operation funded by dormitory room rents.
- The summer program is separate from the state purpose budget and is self-supporting.

Spending for all four major operational units is included in the following analysis. Between the 2002-03 and 2008-09 academic years, FSC’s operating expenditures totaled more than \$333 million. Operating expenditures increased by almost 43% during this period. The state purpose unit accounted for approximately 86% of total operating expenditures. RIMS II multipliers specific to Long Island colleges and universities were used to estimate the ripple effect of this spending. The findings indicate that operating expenditures by FSC during the study period caused Long Island’s output of goods and services, its gross metropolitan product, to increase by more than \$725.7 million, including the original expenditure. This is equivalent to a net output increase of \$392.6 million. Long Island earnings increased by almost \$245 million as a result of these expenditures and more than 7,400 secondary jobs were created throughout the Long Island economy.

### FARMINGDALE STATE COLLEGE OPERATING BUDGET (\$)

Operational Units	2002-03	2003-04	2004-05	2005-06
State Purpose Unit	32,891,600	34,616,773	36,403,489	40,184,818
President’s Office	415,300	353,722	429,892	434,635
Administration & Finance	13,239,500	14,873,765	15,921,748	17,660,684
Academic Division	17,213,200	17,255,863	17,732,967	19,660,618
Student Affairs	1,268,000	1,281,793	1,362,839	1,441,932
Institutional Advancement	619,900	581,364	567,775	703,198
Development	135,700	270,266	388,268	283,751
Economic Opportunity Center	3,625,222	3,392,685	3,821,297	3,848,584
Residence Halls	1,358,200	1,361,125	1,245,630	985,481
Summer Program	1,175,200	1,013,060	1,026,200	1,222,500
<b>Total</b>	<b>39,050,222</b>	<b>40,383,643</b>	<b>42,496,616</b>	<b>46,241,383</b>
	2006-07	2007-08	2008-09	Total, 2002-03 Through 2008-09
State Purpose Unit	45,058,511	48,801,411	48,543,300	286,499,902
President’s Office	443,769	427,618	444,572	2,949,508
Administration & Finance	20,289,134	23,949,604	21,570,685	127,505,120
Academic Division	21,781,770	21,672,555	23,528,589	138,845,562
Student Affairs	1,543,685	1,666,139	1,859,545	10,423,933
Institutional Advancement	705,790	790,201	807,384	4,775,612
Development	294,363	295,294	332,525	2,000,167
Economic Opportunity Center	3,938,687	4,749,147	4,787,260	28,162,882
Residence Halls	1,065,789	1,069,689	1,076,500	8,162,414
Summer Program	1,542,300	2,879,100	1,401,000	10,259,360
<b>Total</b>	<b>51,605,287</b>	<b>57,499,347</b>	<b>55,808,060</b>	<b>333,084,558</b>

Source: Farmingdale State College

**THE OVERALL IMPACT OF FSC OPERATING EXPENDITURES TOTALING \$333,084,558  
2002-03 THROUGH 2008-09 ACADEMIC YEARS**

Type of Multiplier	Multipliers	Secondary Economic Impact
Output	2.1788	\$725,724,635*
Earnings	0.7351	\$244,850,459
Employment	22.3114	7,432

\*Includes original expenditure

Source: Computations based on RIMS II input-output multipliers and FSC operating expenditures

Industry specific RIMS II multipliers indicate how these benefits are distributed by industry within the Long Island economy. As might be expected, the greatest positive impact occurred within the educational services sector. However, virtually all Long Island industries benefited to some extent. The secondary economic impact of specific components of FSC operating expenditures is shown in Appendix A.

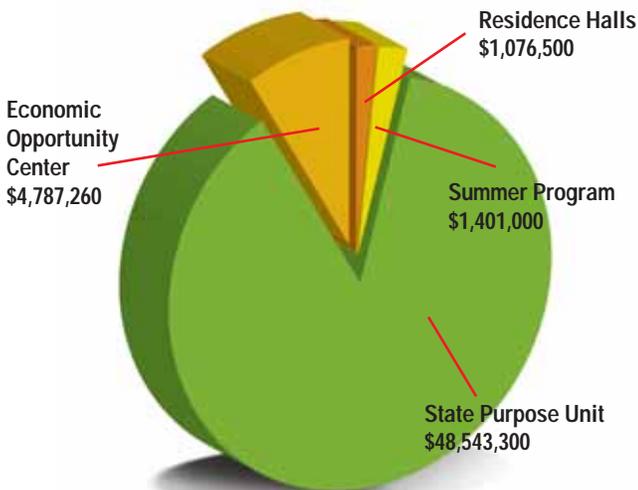
**INDUSTRY IMPACT OF OPERATING EXPENDITURES OF \$333,084,558 BY FSC**

Industry	Gross Output Increase*	Earnings Increase	Employment Increase
Agriculture/Mining	\$1,398,955	\$266,468	22
Utilities	10,292,313	1,898,582	17
Construction	4,596,567	1,632,114	36
Manufacturing	34,041,242	6,361,915	133
Wholesale Trade	18,785,969	5,429,278	87
Retail Trade	28,345,496	8,726,815	351
Transportation/Warehousing	11,624,651	4,230,174	110
Information	22,916,218	5,395,970	87
Finance & Insurance	34,707,411	8,593,582	120
Real Estate/Rental & Leasing	102,456,810	7,527,711	299
Professional/Scientific/Technical Services	21,284,103	8,526,965	148
Management of Companies	5,895,597	2,331,592	24
Administrative/Waste Management Services	20,617,934	7,494,403	269
Educational Services	339,513,090	149,888,051	4,804
Health Care/Social Assistance	33,574,923	14,655,721	349
Arts/Entertainment/Recreation	4,829,726	1,765,348	80
Accommodation & Food Services	14,622,412	4,962,960	298
Other Services	16,221,218	4,863,035	177
Households	0	299,776	19
<b>Total</b>	<b>725,724,635</b>	<b>244,850,459</b>	<b>7,432</b>

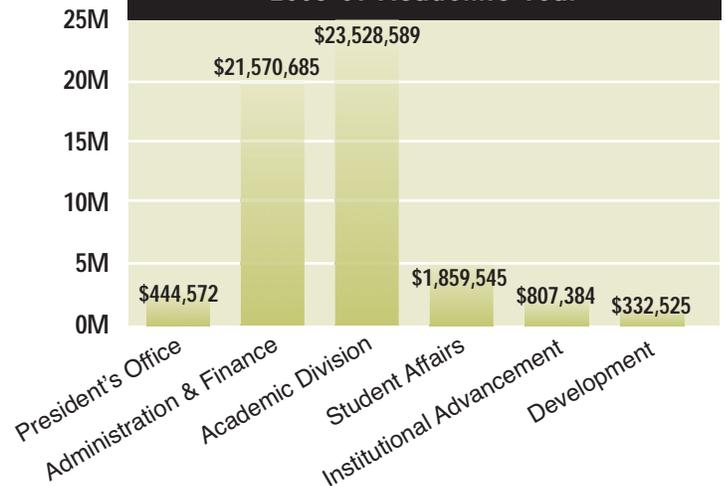
\*Includes original expenditure

Source: Computations based on industry-specific multipliers from RIMS II input-output model.

**The FSC Operating Budget,  
by Operational Unit, 2008-09 Academic Year**



**Components of FSC's State Purpose Unit,  
2008-09 Academic Year**



# The Economic Impact of Capital Expenditures by FSC

Capital construction by FSC incorporates several spending streams including design cost, equipment cost and actual construction cost. Past and projected FSC capital expenditures, by spending stream, are available for the 1999 through 2010 period. They total almost \$173.2 million. Of this amount, \$18.9 million reflects design costs, almost \$142.9 million reflects construction costs and almost \$11.4 million reflects equipment costs.

In analyzing the ripple effect of this spending on the Long Island economy, RIMS II multipliers for architectural and engineering services were applied to design costs, multipliers for construction were applied to construction costs and multipliers for retail trade were applied to equipment costs. The findings show that past and projected capital spending by Farmingdale State College causes Long Island's output of goods and services, its gross metropolitan product, to increase by more than \$348 million, including the original expenditure. This is equivalent to a net output increase of almost \$175 million. This capital spending also causes earnings to increase by more than \$109.5 million and creates an estimated 2,666 secondary jobs throughout the economy.

## PAST AND PROJECTED CAPITAL EXPENDITURES BY FSC, 1999-2010

Start Year	Design Cost	Construction Cost	Equipment Cost	Total Cost
1999	\$2,810,684	\$23,469,147	\$762,368	\$27,042,200
2000	141,247	366,297	0	507,544
2001	77,849	2,091,442	133,269	2,302,559
2002	761,030	3,655,128	181,486	4,597,644
2003	766,504	2,115,380	2,700,000	5,581,884
2004	355,688	19,815,974	500	20,172,163
2005	1,992,011	4,455,236	0	6,447,247
2006	1,406,279	9,050,304	1,456,796	11,913,378
2007	368,500	2,066,812	1,400,000	3,835,312
2008	3,064,804	30,118,255	1,800,000	34,983,059
2009 (p)	5,135,500	30,776,000	2,751,000	38,662,500
2010 (p)	2,022,000	14,918,000	212,000	17,152,000
<b>Total</b>	<b>18,902,096</b>	<b>142,897,975</b>	<b>11,397,419</b>	<b>173,197,490</b>

(p) Projected; Source: Farmingdale State College

## FINAL DEMAND RIMS II MULTIPLIERS FOR SELECTED INDUSTRIES

Industry	Output	Earnings	Employment
Architectural & Engineering Services	1.9021	0.6654	14.5435
Construction	2.0283	0.6330	15.2196
Retail Trade	1.9619	0.5695	18.9473

Source: RIMS II input-output model

## SECONDARY ECONOMIC IMPACT OF PAST AND PROJECTED CAPITAL EXPENDITURES FSC, 1999 THROUGH 2010

Industry	Gross Output Increase*	Net Output Increase	Earnings Increase	Job Increase
Architectural & Engineering Services	\$35,953,677	\$17,051,581	\$12,577,455	275
Construction	289,839,963	146,941,988	90,454,418	2,175
Retail Trade	22,360,596	10,963,177	6,490,830	216
<b>Total</b>	<b>348,154,236</b>	<b>174,956,746</b>	<b>109,522,703</b>	<b>2,666</b>

\*Includes original expenditure

Source: Computations based on industry multipliers in the RIMS II input-output model

Industry-specific multipliers from the RIMS II input-output model for Long Island demonstrate the impact of FSC capital spending during the study period on specific Long Island industries. Although the greatest benefits accrue to the construction industry, virtually all Long Island industries benefit to some extent. The secondary economic impact of specific streams of FSC capital spending is shown in Appendix B.

## INDUSTRY IMPACT OF CAPITAL SPENDING OF \$173,197,490 BY FSC

Industry	Gross Output Increase*	Earnings Increase	Job Increase
Agriculture/Mining	\$ 817,119	\$191,547	10
Utilities	4,051,175	747,194	7
Construction	144,087,111	51,063,023	1,139
Manufacturing	26,217,011	5,046,891	105
Wholesale Trade	12,007,477	3,471,238	58
Retail Trade	31,817,704	9,791,158	391
Transportation/Warehousing	5,625,380	1,865,771	47
Information	8,321,180	1,998,880	31
Finance & Insurance	16,737,552	3,991,362	57
Real Estate/Rental & Leasing	23,081,008	1,327,693	48
Professional/Scientific/Technical Services	32,767,279	13,535,863	248
Management of Companies	4,448,610	1,761,207	18
Administrative/Waste Management Services	7,047,317	2,667,270	97
Educational Services	1,869,807	768,100	28
Health Care/Social Assistance	15,089,002	6,585,368	157
Arts/Entertainment/Recreation	1,816,457	670,631	30
Accommodation & Food Services	5,611,252	1,905,307	114
Other Services	6,741,795	2,012,960	71
Households	0	121,240	10
<b>Total</b>	<b>348,154,236</b>	<b>109,522,703</b>	<b>2,666</b>

\*Includes original expenditure

Source: Computations based on industry-specific multipliers from RIMS II input-output model.

## The Aggregate Economic Impact of Capital and Operating Expenditures by FSC

Complete data concerning operating expenditures are available for academic years 2002-03 through 2008-09. Data concerning actual and projected capital expenditures are available for calendar years 1999 through 2010. In the following analysis, these streams of expenditures have been aggregated despite the fact that the years to which they pertain are not strictly coterminous. The rationale for this is that the goal of the analysis is to gauge the impact of FSC as an economic entity.

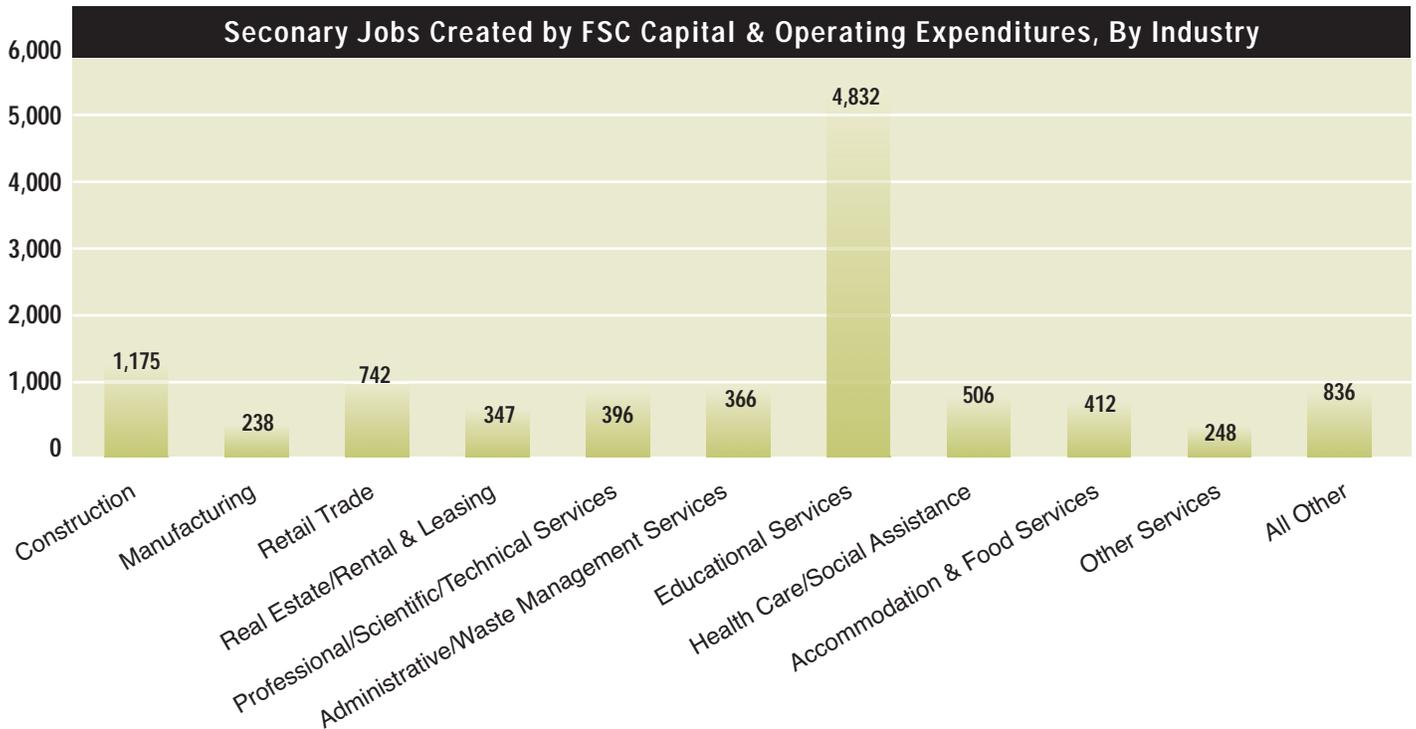
- *Direct operating and capital spending of \$506,282,048 by Farmingdale State College for the periods studied causes Long Island's output of goods and services, its gross metropolitan product, to increase by \$1,073,878,871, including the original expenditure. This is equivalent to a net output increase of \$567,596,823. To put the almost \$1.1 billion economic impact of Farmingdale State College in perspective, the entire gross metropolitan product of Nassau and Suffolk Counties as of 2007 was an estimated \$137 billion.*
- *FSC spending causes Long Island earnings to increase by more than \$354 million and creates more than 10,000 additional jobs in a broad array of industries throughout the Long Island economy. These are jobs that would not exist were it not for spending by Farmingdale State College.*
- *The greatest positive impact occurs in the construction, real estate and educational services industries but all Long Island industries benefit to some extent by the ripple effect from FSC's spending.*

## INDUSTRY IMPACT OF OPERATING & CAPITAL EXPENDITURES BY FSC

Industry	Gross Output Increase*	Earnings Increase	Job Increase
Agriculture/Mining	\$2,216,074	\$458,015	32
Utilities	14,343,488	2,645,776	24
Construction	148,683,678	52,695,137	1,175
Manufacturing	60,258,253	11,408,806	238
Wholesale Trade	30,793,446	8,900,516	145
Retail Trade	60,163,200	18,517,973	742
Transportation/Warehousing	17,250,031	6,095,945	157
Information	31,237,398	7,394,850	118
Finance & Insurance	51,444,963	12,584,944	177
Real Estate/Rental & Leasing	125,537,818	8,855,404	347
Professional/Scientific/Technical Services	54,051,382	22,062,828	396
Management of Companies	10,344,207	4,092,799	42
Administrative/Waste Management Services	27,665,251	10,161,673	366
Educational Services	341,382,897	150,656,151	4,832
Health Care/Social Assistance	48,663,925	21,241,089	506
Arts/Entertainment/Recreation	6,646,183	2,435,979	110
Accommodation & Food Services	20,233,664	6,868,267	412
Other Services	22,963,013	6,875,995	248
Households	0	421,016	29
<b>Total</b>	<b>1,073,878,871</b>	<b>354,373,162</b>	<b>10,098</b>

\*Includes original expenditure

Source: Computations based on industry-specific multipliers from RIMS II input-output model.



Several caveats are needed in interpreting these findings. The foregoing analysis assumes that all of the spending made by Farmingdale State College remains within the Nassau-Suffolk economy and is therefore subject to the multiplier process. In fact, there is always some leakage, as when construction materials are purchased from firms outside Long Island and when construction workers spend their wages off Long Island. Such leakages are generally minor. However, to the extent that they occur, the secondary economic impact of direct FSC expenditures is commensurately reduced.

# The Unique Educational Role of Farmingdale State College

Farmingdale State College is uniquely positioned to generate graduates with the hands-on skills that the Long Island economy currently requires and will require in the future.

## Projected Skill Needs of the Long Island Economy

Technology will be the major “driver” of the economic recovery that will ultimately follow the current recession. In the recent consumer-driven boom, investments in technology and infrastructure have largely been ignored, posing serious dangers to the nation’s long-term competitiveness. In the economy that will emerge from the recession, the financial and consumer sectors will play a smaller role, which will free up resources for the support of new technologies, including alternative energy sources and bioscience research. These investments will ultimately make the nation less dependent on fossil fuels and improve health care outcomes for all Americans. The important role of technology is highlighted in New York State Labor Department occupational projections for Long Island through the year 2014. Many of the fastest-growing occupations between now and then will employ cutting-edge technologies.

### LONG ISLAND GROWTH OCCUPATIONS THROUGH THE YEAR 2014

Occupation	Median Wage
Accountants & Auditors	\$69,900
Automotive Service Technicians & Mechanics	40,500
Chemists	61,600
Chief Executives/Managers	N.A.
Compensation & Benefits Managers	89,560
Computer & Information Systems Managers	118,200
Computer Hardware Engineers	75,790
Computer Programmers	68,300
Computer Software Engineers, Applications	82,800
Database Administrators	72,020
Dental Hygienists	70,080
Diagnostic Medical Sonographers	61,070
Electrical & Electronic Engineering Technicians	54,970
Electrical & Electronics Drafters	66,370
Electrical Engineers	91,410
Engineering Managers	124,760
Environmental Engineers	71,060
Environmental Scientists and Specialists, Including Health	58,330
Financial Analysts	66,730
Financial Managers	112,210
Industrial Engineers	75,330
Industrial Production Managers	94,660
Marketing Managers	143,750
Mechanical Drafters	58,140
Microbiologists	55,410
Natural Sciences Managers	112,360
Network & Computer Systems Administrators	73,250
Radiologic Technologists & Technicians	64,430
Registered Nurses	74,120
Respiratory Therapists	63,780
Technical Writers	66,260
Telecommunications Equipment Installers & Repairers	68,380

N.A. – Not available; Source: New York State Labor Department, Occupational Employment Statistics Survey

# The Evolution of Farmingdale State College as a College of Applied Science and Technology

Founded in 1912 as an agricultural institute, Farmingdale State College is the oldest public college on Long Island. As the Long Island economy shifted from agriculture to heavy industry in the World War II era, the College responded by adding technology-based programs. At the end of World War II, Farmingdale's mission was broadened to include health sciences and engineering technologies. A Dental Hygiene course of study was begun in 1946. As Long Island's aerospace industry began to expand following the war, the College implemented programs in engineering technologies designed to prepare skilled technicians for the industry.

In 1948, FSC became part of the newly established State University of New York. As the Long Island economy shifted towards industries requiring advanced business, professional and technical skills, FSC added additional applied science and technology courses. It inaugurated new Bachelor degree programs and eliminated several Associate degree programs. The first Bachelor degree program was implemented in 1986 and the College was officially designated a four-year institution by the State University of New York in 1993. A total of 24 Bachelor degree programs were offered by the fall of 2008 and new four-year programs are still being added. Today, only ten Associate degree programs, including Nursing, Dental Hygiene, Horticulture and Landscape Architecture, are offered by FSC. Yet they remain central to the College's mission.

FSC has undergone a dramatic transition in terms of its educational mission in the past decades. It is now recognized as the largest College of Applied Science and Technology in the 64-institution SUNY system. Moreover, FSC is the only SUNY technology college with a state-funded, campus-based incubator facility, the Broad Hollow Bioscience Park.

## FSC's Academic Programs

*Farmingdale State College meets the needs of the Long Island/Downstate region and those of New York State through its emphasis on the applied sciences and technology as shown in the following chart.*

### CURRENT FSC DEGREE AND CERTIFICATE PROGRAMS

Bachelor Degrees (B.S.)	Associate Degrees (A.S.)
Aeronautical Science/Professional Pilot	Automotive Technology (A.A.S)
Applied Economics	Business Administration
Applied Mathematics	Criminal Justice/Law Enforcement
Applied Psychology	Dental Hygiene
Architectural Engineering Technology	Landscape Development (A.A.S)
Aviation Administration	Liberal Arts & Sciences
Bioscience	Mechanical Engineering Technology
Business Management	Medical Laboratory Technology
Computer Engineering Technology	Nursing
Computer Programming & Information Systems	Ornamental Horticulture (A.A.S.)
Construction Management Engineering Technology	
Dental Hygiene	<b>Certificate Programs</b>
Electrical Engineering Technology	Accounting
Horticultural Technology Management (B. Tech)	Advanced Programming (local)
Industrial Technology/Automotive Management Technology	Computer Information Systems
Industrial Technology/Facility Management Technology	Computer Systems Technology (local)
Manufacturing Engineering Technology	Digital Electronics and Microprocessors
Mechanical Engineering Technology	Health Studies
Nursing	International Business (local)
Professional Communications	Linear Electronics and Communications
Security Systems	Management
Software Technology	Manufacturing Methods and Numerical Controls
Technology Studies	Marketing
Visual Communications (B. Tech)	Ornamental Horticulture
	Practical Nursing
	Sciences for the Health Professions

Source: Farmingdale State College

**1** FSC degree programs produce highly educated employees in engineering technology, manufacturing, architecture, construction, aviation and automotive industries.

FSC's School of Engineering Technologies offers several unique degree programs. Its B.S. degree program in **Manufacturing Engineering Technology** is the only hands-on program in the region that focuses on quality control, destructive and nondestructive testing and computer aided manufacturing. Graduates are able to program, maintain and plan manufacturing systems. They are also qualified to test and inspect manufactured products. FSC also offers B.S. degrees in **Mechanical Engineering Technology** and **Facility Management Technology** and an A.A.S. degree in **Mechanical Engineering Technology**. Graduates of these programs play a pivotal role in retaining technology-intensive manufacturing enterprises on Long Island and in helping them to expand.

FSC's B.S. degree programs in **Architectural Engineering Technology** and **Construction Management Technology** are nationally accredited. The Construction Management degree is the only such program on Long Island. The Architectural Engineering degree is the only such nationally accredited program on Long Island and in the downstate area.

FSC is the only public institution in New York State to offer a Bachelor of Science Degree in **Aviation**. In 1995, FSC opened a new aerospace technology facility at nearby Republic Airport. The new facility contains the flight line, FSC's college fleet of 19 Piper and Cessna aircraft, an aircraft maintenance hanger as well as classrooms, offices and simulators.

FSC is also the only public institution in New York State offering Bachelor of Science Degrees in Automotive Technologies. The Department of Automotive Technology and Automotive Management Technologies offers two degree programs: An A.A.S. in **Automotive Technology** and a B.S. in **Automotive Management Technology**. The A.A.S. program prepares technicians for direct entry into the automotive industry. The B.A. program is designed to develop the requisite skills for management positions in the automotive industry or related fields.

**2** FSC offers degree programs that equip students with the quantitative analytical and problem-solving skills needed in business, finance, government, research and nonprofit organizations.

The growing technical orientation of the Long Island economy requires more sophisticated quantitative skills with an emphasis on conceptual understanding, problem solving through mathematical modeling and the use of real-world data. FSC's baccalaureate program in applied mathematics relates mathematics to the real world with an emphasis on the applications of mathematics in realistic contexts. Students at all levels are required to use graphing calculators and to utilize appropriate computer software packages to explore mathematical concepts and to estimate and develop solutions to complex problems. Through its newly established **Center for Applied Mathematical Sciences**, the mathematics faculty works with representatives of local business, industry and government to identify the mathematical problems they face. Students then work to solve these problems under the supervision of the mathematics faculty. For example, FSC math students recently helped to solve traffic flow problems along Suffolk's growing Route 110 business corridor.

FSC's mathematics department has also developed a comprehensive program to support the biological sciences, clearly a future growth sector on Long Island. The math faculty in conjunction with faculty members in the biosciences recently developed an interdisciplinary course in mathematical modeling in the biological sciences. The mathematical content of several biology courses has also been upgraded and expanded, reflecting the need for a more quantitative approach to biology.

The baccalaureate program in applied economics prepares students for careers in business, financial institutions, government, and public and private research and nonprofit organizations. Students receive extensive instruction in the quantitative and statistical methods used to analyze technical, industry, business, and public policy issues. In addition, applied economics majors participate in a two semester senior seminar in which they learn the methods and techniques of economic research and report writing with an emphasis on the generation and presentation of economic and analytical reports for the general public. Program graduates find employment in occupations such as entry level economist, quantitative analyst, business analyst, financial analyst, regional planner, manager, and research analyst.

## 3 FSC prepares tech-savvy professionals for challenging careers in computer and information systems.

Students in the B.S. Degree in “**Computer Programming and Information Systems**” offered by the Computer Systems Department select one of four tracks with concentrations in Programming, Systems Development, Networking or Web Development. This program provides a practical hands-on approach to solving business problems. Graduates typically find employment as Computer Support Specialists, Information Technology Specialists, Data Communications Analysts, Quality Assurance Technicians, Systems Analysts, Programmer/Analysts, Data Base Analysts, Web Developers and Network Administrators.

## 4 FSC degrees lead to successful careers in a wide range of business fields.

The B.S. Degree in “**Business Management**” gives students exposure to business issues and functions through introductory core business courses and a significant portion of elective courses. Students may choose from a wide array of course concentrations in Business, Computer Systems and/or Sports Management. Typical employment opportunities include Customer Relations Manager, Entrepreneur/Small Business Manager, Financial Services Specialist, Import/Export Administrator, International Business Facilitator, Logistics and Supply Chain Manager, Manufacturing Resource Planner, Production and Inventory Manager, Purchasing and Materials Specialist, Quality Manager and Technologist, and Sales & Marketing Specialist.

The B.T. Degree in “**Horticulture Technology Management**” offered by the Ornamental Horticulture Department is designed to produce versatile graduates prepared for a wide range of entry level and middle management positions in the extensive green industry on Long Island and beyond. The two major concentrations are General Horticulture and Landscape Development. Each concentration draws from course work in Horticulture, Business and the Arts and Sciences. The broad scope of courses allows students to experience various phases of horticultural operations as well as business procedures and practices. The mix of horticulture and business studies maximizes students’ employment opportunities and career choices. Graduates of this program may develop careers owning and operating their own businesses, propagating plants, designing interior and exterior landscapes, managing golf courses, estates and garden centers, merchandising plant products and numerous other possibilities within the green industry.

The B.T. Degree program in “**Visual Communications: Art and Graphic Design**” offered by the Visual Communications Department consists of a comprehensive curriculum that has been carefully designed by professional graphic designers and illustrators to prepare students for careers within the commercial art field. In addition, the special

internship opportunities at FSC’s “in-house” advertising agency enable students to gain essential professional experience, which gives them a competitive advantage when seeking employment. Graduates of this program have established successful careers at some of the best-known advertising agencies, art studios, and in-house art departments in the New York region and across the country. In addition, FSC graduates have become successful entrepreneurs and have opened their own art studios, ad agencies and art-related businesses. Others work as freelance artists. Program graduates have become Art Directors, Creative Directors, Illustrators, Graphic Designers, Web Page Designers, Animators, Photographers, Teachers, Production Managers, Package Designers and Computer Artists.

The B.S. Degree in “**Applied Psychology**” offered by the Psychology Department is unlike traditional undergraduate psychology programs that lead to careers or advanced study in social work and counseling. The FSC program prepares graduates for entry-level positions in business and human resource management. Required courses include Industrial Organizational Psychology, Personnel Management, Organizational Behavior, and Applied Personnel Psychology. Internships and senior research projects prepare students for business careers on Long Island and elsewhere in New York State.

FSC’s B.S. Degrees in “**Professional Communications**” ensure that majors gain mastery of writing, speaking and computer-based skills. Students complete advanced courses in professional writing as well as courses in speech, desktop publishing, psychology, web design, and public relations. Graduates of this program find employment in public relations, advertising, marketing, management, technical writing, publishing, journalism, broadcasting, and grant writing. Many also proceed to graduate school in education, public policy, business, library science and law.

## 5 FSC serves the Health Care Industry by producing professionals in nursing, dental hygiene, and medical laboratory technology.

The Nursing Department at FSC offers a Practical Nurse Certificate program as well as an Associate Degree (A.S.) and generic Bachelor of Science (B.S.) program. Additionally, there is an accelerated track for Licensed Practical Nurses who wish to obtain their associate degrees and a B.S. completion track for RNs who wish to complete their baccalaureate degrees. The RN programs offer flexible schedules, including day, evening and weekend clinical practice, as well as courses being offered at Winthrop University Hospital for their employees.

The Dental Hygiene program at FSC is the only such program on Long Island. FSC offers both an Associate of Science degree leading to licensure and an on-line Bachelor of Science degree completion program. Clinical courses are taught in a state-of-the-art dental hygiene care center that

serves as a learning laboratory for students. Students in the dental hygiene program provide dental hygiene services to the local community, including Head-Start children, as part of their educational experience. Internships with various healthcare industries and agencies as well as opportunities to study abroad broaden the students' understanding of the professional role of the dental hygienist in the health care system.

The Medical Laboratory Technology program offers an Associate in Science Degree that prepares students with the knowledge, technical skills, and problem-solving ability to meet the needs of regional clinical laboratory employers.

## 6 FSC's cutting-edge interdisciplinary programs prepare graduates for careers in new fields of employment emerging in the 21st Century

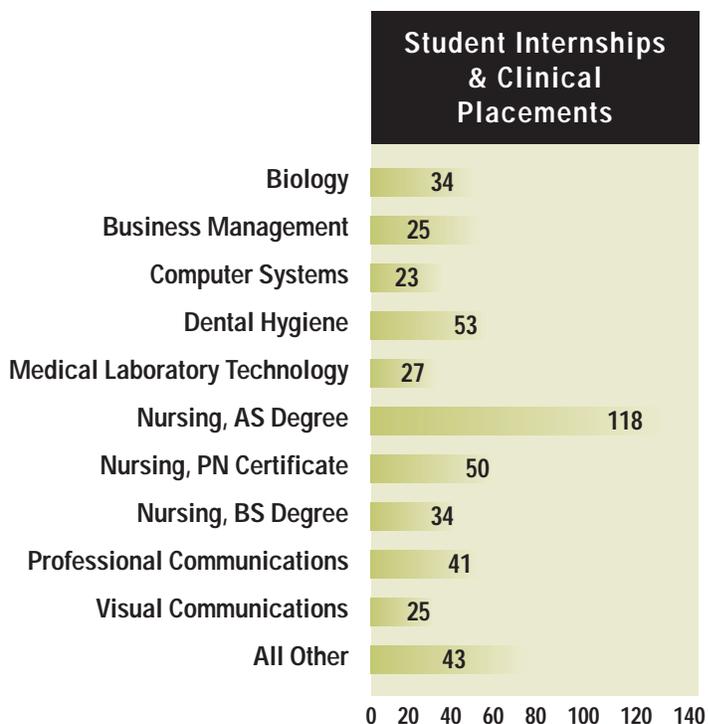
Because today's growth industries are evolving from hybrid fields, the academic programs at Farmingdale are increasingly inter-disciplinary and cross disciplinary rather than entrenched within specific disciplines. As a consequence, the learning experience at Farmingdale is applied and collaborative rather than theoretical and solitary. The following examples demonstrate the interdisciplinary nature of the FSC curriculum:

- **The B.S. Degree in "Security Systems" offered by the Criminal Justice Department.** Rather than preparing students for social service oriented careers in policing, probation, and corrections, this modern program seeks to educate a new breed of security director who will be called upon to manage complex computer technologies. Therefore, the interdisciplinary curriculum combines traditional criminal justices courses with technical courses in computer forensics, cyber law and electronic espionage, and advanced networking.
- **The B.S. Degree in "Bioscience" offered by the Bioscience Department.** Because drug discovery now involves advanced computer techniques, this interdisciplinary curriculum includes the new field of bioinformatics. It features extensive use of computer-based learning. Graduates who enter this growing Long Island industry are qualified as bioinformatics specialists, compounding supervisors, quality assurance auditors, research associates, evidence technicians, forensic technicians, DNA technicians, regulatory affairs specialists and manufacturing associates.

- **The B.S. Degree in "Software Technology" offered by the School of Engineering Technologies in collaboration with the School of Business.** This program provides students with technical and professional skills that enable them to customize and apply standard computer software in a wide range of business and manufacturing functions. By combining studies of computer hardware, programming, networking and software applications with technical specialties such as manufacturing processes and facilities management, graduates are prepared for careers as software engineers, computer network technologists, human resource management specialists, and manufacturing graphics technologists.

## The Emphasis on Hands-On Learning: Student Internships & Guided Research

As part of the learning process, FSC involves students in solving problems important to local businesses, government agencies and community organizations. Student internships and clinical placements are an important part of this process. They give FSC students "hands on" experience in actual work situations and ensure that many of them will have well-paying jobs upon graduation. At the same time, they provide local businesses with the talent they need to thrive and grow. There were 473 student internships and clinical placements during the 2007-08 academic year.



## INTERNSHIPS AND CLINICAL PLACEMENTS

Department	Placement	Department	Placement	
<b>Architecture/ Const. Management</b>	Slattery, Skanska Inc.	<b>Professional Communications</b>	Suffolk County Offices	
	Greyhawk North America		LI Radio Group	
	NYS Transportation Dept.		MTV	
	E.W. Howell		Enterprise Rentals	
	Long Island Railroad		Long Island School Dist.	
	Turner Construction		NY Observer	
	The Thomas Group		Channel 21	
	Pulte Homes		CBS	
	J.D. Posillico		Stony Brook Hospital	
	<b>Aviation Pro-Pilot</b>		Republic Airport	Suffolk Community Council
U.S. Airways		WBAB Radio		
Federal Express		Nationwide Insurance		
Sheltair-FBO		Techno Inc.		
Jet Blue Airlines		Channel 55		
Port Authority of NY/NJ		Conde Nast		
Northeastern Aviation		The Bronx Zoo		
Atlantic Aviation		Assembly. J. Saladino		
<b>Biology</b>	Bartlett's Tree Care	<b>Dental Hygiene</b>	Cystic Fibrosis Foundation	
	CVS Pharmacy		Long Island Press	
	ICON Central Labs		Health Plex Dental Insurance	
	Knott, D.C.		Patterson Dental	
	LIJ Dept. of Hematology		Designs for Vision	
	Nasami, DDS		Stony Brook Veterans Home	
	OSI Pharmaceuticals		North Shore/LIJ Health System	
	Sunrise Medical Labs		Stony Brook Dental School	
	Cornell Vet. Medicine		Northport Vet's Hospital	
	Feinstein Research Inst.		Schneider's Childrens Hospital	
<b>Business Management</b>	IRX Therapeutics	<b>Electrical Engineering</b>	Comtech PST Corporation	
	Lehrer, D.C.		Telephonics	
	LI Vet. Specialists		ILC Data Device Corporation	
	Nelco Labs		Underwriter's Labs	
	Patino, DDS		Vision Communication	
	The Genetics Center		MPD Technologies	
	Village Animal Hospital		Northrop Grumman	
	Islanders		<b>Economics/Politics</b>	NYS Senate Office - Albany
	Lizards		<b>Medical Lab. Tech.</b>	ICON Labs
	Dragons		Sunrise Medical Labs	
MSC Industrial	Winthrop University Hospital			
Dale Carnegie	Core Labs			
Canvas Magazine	So. Nassau Community Hospital			
Mercury Records	Nassau University Medical Ctr.			
Rangers	St. Catherine of Sienna			
Long Island Ducks	North Shore-LIJ Health System			
Vanderbilt Securities	Nassau University Hospital			
Fixed Income Securities	Long Beach Memorial Hospital			
Enterprise Rent a Car	<b>Nursing AS</b>	Little Flower Nursing Home		
Ameriprise		Good Samaritan Hospital		
John Hancock Financial		Nassau University Medical Ctr.		
Long Island Railroad		St. Catherine's Hospital		
<b>Computer Systems</b>	Invision	Winthrop University Hospital		
	VICOM	Mercy Medical Center		
	Lehman Brothers	South Oaks Hospital		
	Episcopal Health Services	Parker Jewish Geriatric Institute		
	Nassau Cty. Sports Com.	Huntington Hospital		

## INTERNSHIPS AND CLINICAL PLACEMENTS (CONTINUED)

Department	Placement	Department	Placement
Nursing PN Certificate	Little Flower Nursing Home	Nursing BS	Southside Hospital
	Central Islip Hospital		Syosset Hospital
	Nassau University Medical Ctr.		Long Beach Hospital
	Parker Jewish Geriatric Institute		New Island Hospital
	Good Samaritan Hospital		Little Flower Nursing Home
	Winthrop University Hospital		North Shore LIJ Health System
Ornamen. Horticulture	Planting Fields Arboretum		Parker Jewish Geriatric Institute
			Stony Brook University Hospital

Source: Farmingdale State College

Guided research is also part of the experiential learning process at FSC. This research is conducted under the guidance of some of the most prominent members of their respective professions. The number of students participating in guided research, by department, is shown below.

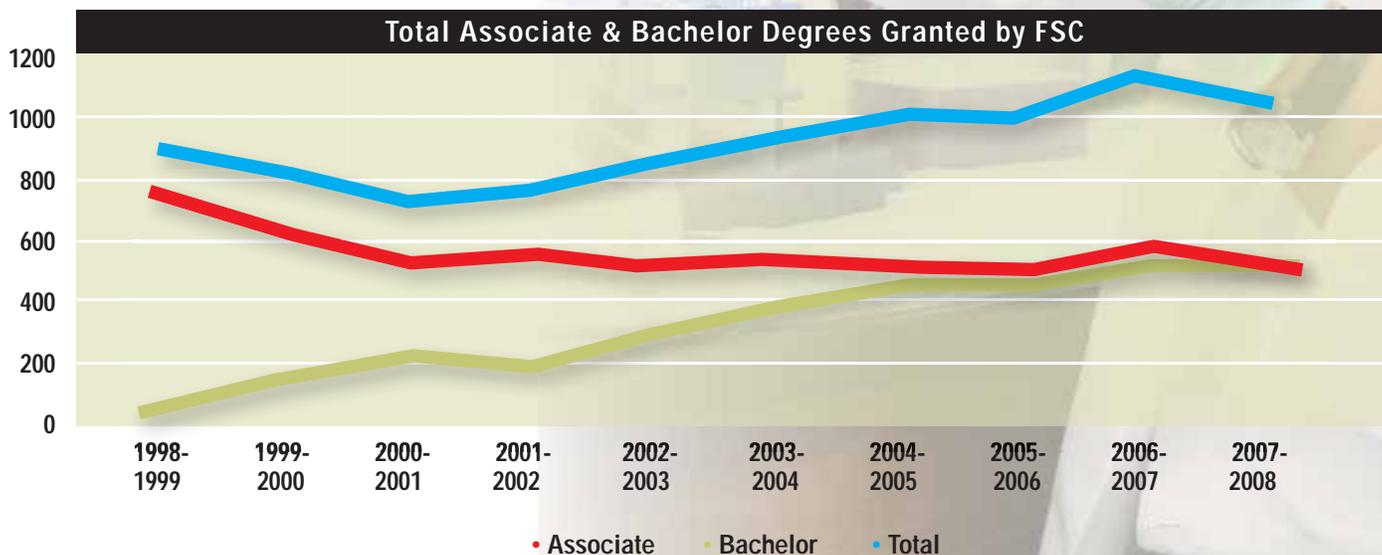
## FSC EXPERIENTIAL LEARNING 2007-2008: GUIDED RESEARCH

Department	Students Participating in Guided Research
Architecture & Construction Management	5
Biology	34
Mechanical Engineering Technology	7
Mathematics	15
Ornamental Horticulture	2

Source: Farmingdale State College

## FSC's Student Body: Aspiring to Even Greater Achievements Growing Selectivity in Student Admissions

In the aggregate, FSC's four Schools – Arts and Sciences, Engineering Technologies, Health Sciences, and Business – enroll over 6,800 undergraduate students. As FSC has evolved into a four-year institution, it has granted proportionately more bachelor's degrees and proportionately fewer associate degrees. During the 2007-08 academic year, FSC granted 1,106 degrees, of which 49 percent were four-year bachelor degrees. By contrast, 81 percent of the 905 degrees awarded by FSC during the 1998-1999 academic year were two-year associate degrees.



Applications to FSC have doubled in the past decade and admission to the college has become increasingly selective. The number of applicants, including transfer students, increased from 4,229 during the 1999-2000 academic year to 8,076 in the 2007-2008 academic year. Less than half of all applicants are currently offered admission. Applications for the 2008-09 academic year are estimated at 8,852, an 11% increase from the prior academic year. The average high school GPA for bachelor degree candidates upon admission for fall 2008 was 86.6 and the average SAT score for bachelor degree students was 1,010. The proportion of full-time students has also increased consistently during the past decade.

### APPLICATIONS, FARMINGDALE STATE COLLEGE, 1999-2000 THROUGH 2008-2009

Academic Year	Freshman	Transfer	Total
1999-2000	3,161	1,068	4,229
2000-2001	3,310	1,189	4,499
2001-2002	3,799	1,349	5,148
2002-2003	4,216	1,599	5,815
2003-2004	4,278	1,704	5,982
2004-2005	4,537	1,840	6,377
2005-2006	4,733	2,035	6,768
2006-2007	5,442	2,357	7,799
2007-2008	5,748	2,328	8,076
% Increase, 1999-2008	82%	118%	91%
2008-2009 Estimated	6,408	2,446	8,852

Source: Farmingdale State College

### SELECTIVITY, FULL-TIME VS. PART-TIME ENROLLMENT, FARMINGDALE STATE COLLEGE

Academic Year	High School Average	SAT Average	Full-Time Enrollment	Part-Time Total Enrollment	Total	% Full-Time Enrollment
1999-2000	79.7	902	2,917	2,234	5,151	57
2000-2001	80.1	914	3,009	2,036	5,045	60
2001-2002	79.8	910	3,350	2,099	5,449	61
2002-2003	80.8	932	3,564	2,162	5,726	62
2003-2004	81.9	953	3,644	2,305	5,949	61
2004-2005	82.5	965	3,789	2,461	6,250	61
2005-2006	82.6	970	4,020	2,442	6,462	62
2006-2007	83.8	950	4,266	1,990	6,256	68
2007-2008	84.6	970	4,455	1,992	6,447	68

Source: Farmingdale State College

The growing selectivity of Farmingdale State College in admitting students and the outstanding academic achievements of those students who are admitted is reflected in the fact that seven FSC students are applying for Fulbright Scholarship Awards during the 2009-2010 academic year; the first time that FSC students have applied for these prestigious awards.

The depth of knowledge that these students display is evidenced by their proposed research projects. Two of these projects are outlined below.

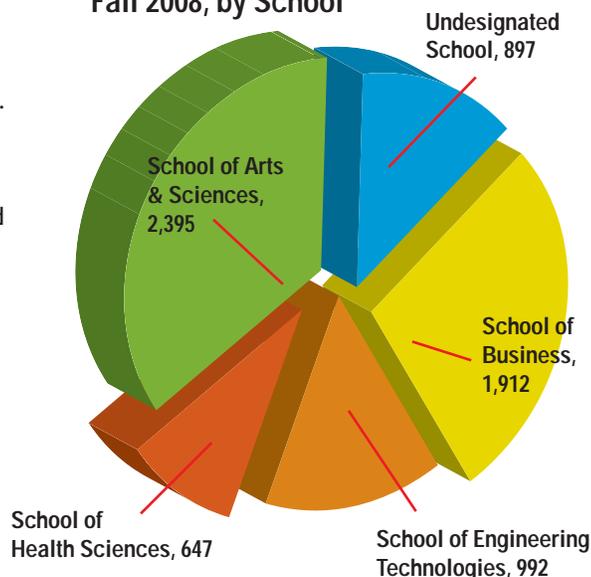
- Kathleen Flanagan proposes to investigate the role of autoimmunity in mood disorders. She hopes to join an ongoing research group working on autoimmune disorders at Erasmus University of Rotterdam, Netherlands. She looks forward to studying the function of dendritic cells, monocytes and macrophages in relation to proinflammatory states of animal and human subjects. Her mentor at FSC, Dr. Frances Santiago-Schwarz is a pioneer in the area of dendritic cells and autoimmune diseases.
- Timothy Resig hopes that his proposed research will make eco-friendly energy sources such as wind and solar power less expensive through his efforts to develop and implement more advanced and efficient manufacturing techniques. In his undergraduate work he has studied several manufacturing methods that can make these “green” technologies more affordable. He hopes to pursue a Masters Degree at the University of Canterbury in New Zealand. The University’s Mechanical Engineering department has invited him to join a research team studying advanced composites and their uses in wind turbines.

# FSC Enrollment by School and Major Program, 2008-09 Academic Year

Fall enrollment during the current academic year totaled 6,850 students of whom 4,878 were matriculated full-time and 1,972 were part-time students.

The **School of Business** accounted for an estimated 1,912 students. Students in business management comprised the largest group of students followed by students in computer programming, business administration and visual communications. The **School of Arts and Sciences** accounted for 2,395 students. Popular majors within this school include liberal arts, bioscience, security systems, criminal justice and communications. The construction management and electrical engineering programs accounted for the largest number of students within the **School of Engineering Technologies**. Other popular majors include architectural studies, mechanical technology, and computer engineering and industrial technology. The nursing program accounted for the largest number of students in the **School of Health Sciences**. There was also significant enrollment in the health studies and dental hygiene programs.

Matriculated FSC Students, Fall 2008, by School



## ENROLLMENT BY PROGRAM, FALL 2008

School of Arts & Sciences	Full-Time Students	Part-Time Students	Total Students
Liberal Arts	621	89	710
Criminal Justice	168	23	191
Professional Communications	127	27	154
Security Systems	144	50	194
Bioscience	253	70	323
All Other Including Undeclared Major	739	84	823
<b>Total</b>	<b>2,052</b>	<b>343</b>	<b>2,395</b>

School of Business	Full-Time Students	Part-Time Students	Total Students
Business Administration	218	64	282
Business Management	777	200	977
Computer Programming & Info. Systems	232	66	298
Visual Communications	175	31	206
All Other	73	76	149
<b>Total</b>	<b>1,475</b>	<b>437</b>	<b>1,912</b>

School of Engineering Technologies	Full-Time Students	Part-Time Students	Total Students
Automotive Engineering	41	3	44
Electrical Engineering Technology	106	51	157
Architecture	92	16	108
Aviation Administration	54	11	65
Aeronautical Science	70	16	86
Construction Management	117	60	177
Industrial Technology	59	14	73
Mechanical Technology	81	27	108
Computer Engineering Technology	71	17	88
All Other	41	45	86
<b>Total</b>	<b>732</b>	<b>260</b>	<b>992</b>

School of Health Sciences & Human Services	Full-Time Students	Part-Time Students	Total Students
Health Studies	71	47	118
Nursing, AS & BS	119	197	316
Dental Hygiene	95	50	145
Medical Laboratory Technology	26	17	43
Practical Nurse	4	21	25
<b>Total</b>	<b>315</b>	<b>332</b>	<b>647</b>

Source: Farmingdale State University

# FSC Graduates: Playing a Key Role in the Long Island Economy

The “proof of the pudding” concerning the effectiveness of the education and training offered to students at FSC is their on-the-job performance. Of the 120 U.S. companies that reported hiring FSC graduates in 2007, 112 were from Long Island. The following testimonials by a broad cross-section of Long Island businesses underscore how closely FSC’s academic programs meet the skill needs of local employers.

- “Mel Pilar Espaillet, a bioscience undergraduate from SUNY Farmingdale was hired as a Quality Control Analyst in October 2007...and has been a significant contributor in the success of IRX Therapeutics. Her education and training in...flow cytometry and immunological assays were key factors in the hiring of Mel Pilar...I believe Mel Pilar’s excellent performance is due to the education and training that she received from the [FSC] bioscience program.” **Jacob Simon, IRX Therapeutics, Farmingdale, NY, October 2008**
- “GKN Aerospace-Monitor, Inc. has developed a strong relationship with the Mechanical Engineering Department at SUNY Farmingdale...Our Director of Mechanical Engineering, Tom Tacopina, our N/C Programming Supervisor, Steve Beach, and our Director of Continuous Improvement, Dean Malhado, are graduates of Farmingdale’s Mechanical Engineering Technology program. Most of the engineers whom we have employed over the past 30 years have come directly out of Farmingdale’s engineering program...we are thankful for the high quality mechanical and manufacturing engineering programs that exist at SUNY Farmingdale. We will continue to rely heavily on this resource to provide for our staffing needs as we move forward in the exciting and promising aerospace industry.” **Richard Dallari, GKN Aerospace Monitor, Inc., Amityville, NY, September 2008**
- “Farmingdale College’s Mechanical Engineering Department does an excellent job in teaching applied engineering knowledge in mechanical, manufacturing and facility management engineering technologies. The college’s contact in

our local manufacturing scene results in a very effective flow of knowledge” **Gregg Safarian, P&K Tubular/Flagpole, Inc., East Setauket, NY, May 2006**

- “The academic foundation and skills given to the students in the mechanical and manufacturing programs is outstanding. The students’ applied knowledge reflects the ability to be productive in an engineering and manufacturing environment immediately.” **Vincent Marzigliano, VM Manufacturing Co., Inc., Holbrook, NY, March 2006**
- “Huntington Hospital has served as a clinical site for students from the Nursing Program at Farmingdale University for over 15 years. We have had the opportunity to work closely with both faculty and students during this time. As a result of this relationship, we seek to recruit graduates based on our experience during the clinical rotations. The familiarity with the clinical facility, equipment and policies and procedures is an asset in easing the transition from academia to service. In addition, it has been our experience that the Nursing Program has strived to incorporate significant regulatory issues such as the Joint Commission’s National Patient Safety Goals into the students’ preparation for the work setting. This is a major advantage for new graduates as they acclimate to the hospital setting in their new role. Farmingdale nursing graduates verbalize understanding of these regulatory requirements and this assists them to a successful completion of orientation. In addition, the capstone experience provided in the final semester serves to enhance the clinical skills of the new graduate nurses.” **Diane, J. Peyser, RN, MS, NE-BD, Director of Staff Development, Huntington Hospital, Huntington, NY, October 2008**
- “I have had the pleasure of employing Patricia Paisley as a Graphic Designer for the Friedberg JCC. It was an exhaustive search to find the right candidate – one who would understand the JCC environment and had the skills needed to deliver the agency’s message in a professional manner. Patricia’s design skills are top-notch – she is always striving for excellence. I had interviewed candidates from top design schools in the metro area but found Tricia’s skill set the best match. I would not hesitate to hire another student from FSU” **Judy Fishkind, Director of Marketing, Friedberg JCC, October 2008**
- “I am an Art Director for an industrial parts company in Hauppauge that has a very active art department. This department is responsible for all the promotional pieces (catalogs, booklets, brochures, seasonal promotions, trade publication ads, trade show booth art, and much more). When I need to hire additional artists and spend time with the interview process, it is very important to me where they were trained. I have found that during my 30+ years experience that when I interview someone from Farmingdale State College, I know that they will have solid fundamental knowledge of the three primary software programs that we use (Quark, Photoshop & Illustrator). My latest hiring of Mary Palminteri is no exception. She has proven to be helpful, reliable and competent with all of the projects we need to complete.” **Bruce Towell, Art Director, Motors & Armatures, Inc., Hauppauge, NY, October 2008**
- “It has been 3 years, and to this day, I am glad I hired a Farmingdale graduate. Dejan Popovic has proven to be an excellent employee who came from Farmingdale well prepared for the workplace. He was eager to learn and had an excellent, fresh design sense right from the start. He needed to become more advanced in the web design and HTML programs and what knowledge he had coming here was a good starting point for jumping right in and mastering the various programs. If I have the need to hire another designer at some point, I would certainly look at a Farmingdale graduate again.” **Steve Greco, Vice President Creative Services, Don Jagoda Associates, Melville, NY, October 2008**
- “I have hired 2 graphic designers who are FSC grads. They came in with a well-rounded knowledge of the programs and procedures of an agency. They had a great work ethic and balanced egos. Patrick Curran is still working here and was a great addition. Erin Dengeles has moved on to a creative management position at another company. We also had the pleasure of having Mike Caradonna intern with us this past summer and he not only had a great knowledge of the latest software but also possessed a talent for creative design seldom seen in an intern. I’ve interviewed recent grads from several programs, but only hired FSC grads, and given the need would do so again.” **Maria Pancella, Director of Production, Black Twig Communications, Melville, NY, October 2008**

# Economic Development Initiatives Supported by FSC Faculty, Research Institutes and Training Programs

The success of FSC's students in large measure reflects the expertise and dedication of the FSC faculty. The college currently employs 526 faculty members, including 184 full-time and 342 part-time members. The large number of part-time faculty members reflects the fact that many of the disciplines taught at FSC benefit from the valuable hands-on skills of practitioners employed in local businesses, government agencies and institutions.

Faculty members keep abreast of the latest developments in their respective fields by publishing groundbreaking research in nationally recognized, peer-reviewed journals, authoring books and chapters in books and making presentations at professional conferences in their respective disciplines. This enhances their ability to provide the highest quality education to their students. They also regularly collaborate and consult with professional associations and with industry representatives to ensure that their academic programs are current and responsive to the changing needs of business and industry. This makes it possible for Farmingdale faculty to respond quickly to advances in science and technology. FSC's advisory committees include leaders in business, industry and the professions. The utilization of these outside advisors means that program and curriculum development at FSC is agile, dynamic and up-to-date rather than static.

FSC has also established several institutes that support economic development on Long Island and throughout New York State. FSC faculty members help to ensure the success of these institutes. The **Institute for Research Technology Transfer** was established in 1996. It provides local companies with ready access to modern, cost-effective manufacturing systems and assistance by faculty members knowledgeable about the latest cutting-edge technologies. By demonstrating and disseminating these state-of-the-art technologies, faculty members associated with the Institute help local industrial firms become more competitive. They also engage in collaborative applied research with local businesses and help them to secure the government R & D funds needed to further their research.

FSC has also become a leader in energy research. It has partnered with Stony Brook University in applying to the Federal government for funding to develop easily portable, renewable energy for use in remote sites. Its Solar Energy Center, established in 2000, offers workshops on Residential Photovoltaic Systems Installation and Maintenance, Advanced Photovoltaics, Solar Thermal and Solar Marketing. The **Solar Energy Center** is accredited by the Institute of Sustainable Power as both a training institution and a continuing education institution on solar energy. It is the first such center in the Northeastern United States to receive such accreditation.

FSC's Office of Corporate and Professional Development (OCPD) develops partnerships with businesses throughout Long Island and beyond. The goal is to increase their global competitiveness. Distinctive programs in computer technology, lean, six sigma, manufacturing, business and management are regularly presented throughout the year. The OCPD also provides customized training programs to meet the workforce needs of local businesses. These programs, designed in conjunction with company officials, take place at the business site or on FSC's campus. Sharing information with local CEOs regarding the training needs of their businesses also allows FSC to restructure its curricula to better prepare students for today's workplace.

Since 2005, the OCPD has trained approximately 5,500 adult learners through courses in Phlebotomy, Electronics, Time Management, Business Writing and Database Management. Clients of the OCPD include Estee Lauder Companies, Icon Laboratories, OSI Pharmaceuticals, Long Island Commercial Bank, Winthrop University Hospital, Nassau University Medical Center, North Shore-Long Island Jewish Healthcare System, Brookhaven National Laboratories, Astoria Federal Savings and Loan and York Industries. By upgrading the skills of their workforce, local employers are able to cut costs, increase worker performance and productivity and improve profits. These training programs have also provided an independent source of revenue for FSC. Since 2004, they have generated gross revenue of more than \$1.5 million.

One of the most successful interactions between FSC and local industry has been the on-campus **Broad Hollow Bioscience Park**. The Park was incorporated on-campus in 1998 as a joint venture between FSC and Cold Spring Harbor Laboratory. Its goal is to spur the creation of more than 1,200 bioscience jobs in the immediate area within the next decade. Long Island enjoys several competitive advantages for the fledgling bioscience industry. Foremost among them is the presence of premier research institutions such as Cold Spring Harbor Laboratory and Brookhaven National Laboratory. The cutting edge technologies developed at these institutions are a potential source of new science-based businesses. Cold Spring Harbor Laboratory (CSHL), a world-renowned research and educational institution, is just 20 minutes from the bioscience park. It is recognized for its research in cancer, neuroscience, genomics, bioinformatics and plant genetics. The bioscience park is also likely to attract new startups generated by the many medical research institutions in Manhattan.

The Park's first building, incorporating 63,500 square feet of research space, opened in June 2002 and OSI Pharmaceuticals, a promising early-stage bioscience company, became the park's anchor tenant. OSI has since donated scholarships to FSC to support Farmingdale's bioscience academic program. A second 43,000 square foot research building, designed to accommodate additional start-up and early stage bioscience companies, recently opened. Laboratory space in this facility can be leased in increments of 535 square feet at a highly competitive base rent of \$23 per square foot.

Development of the bioscience park spurred implementation of a new bioscience degree program at FSC. The new program, which was approved by New York State in June 2003,

trains the bench scientists needed by the region's expanding bioscience industry. Student options include bioinformatics, molecular pathology, forensic DNA technology, bioprocessing and pharmaceutical manufacturing. The program, which began with 33 students, expanded to include 175 students in its first two years of operation.

The bioscience park and the FSC bioscience faculty have entered into a symbiotic relationship. The bioscience park provides internships for students in the program and the expertise of bioscience faculty members in fields such as flow cytometry provides a valuable resource for tenant companies at the park. FSC's long-term plans also include workforce housing that will support both the bioscience park and the educational mission of the university.

## The Future Role of Farmingdale State College in Promoting Economic Growth

*Farmingdale State College is expected to play a pivotal role in promoting future economic growth both on Long Island and within New York State. It is particularly well positioned to leverage its location and academic standing to support the commercialization of new technologies in the energy and bioscience fields.*

## FSC's Future Role in Promoting Bioscience Technology

With the development of well-configured laboratory research space for private companies in the on-campus Broad Hollow Bioscience Park, FSC can play a pivotal role in capturing young, fast-growing bioscience companies spun off by nearby Cold Spring Harbor Laboratory and other local research institutions and by medical institutions in Manhattan. This will generate a bioscience cluster adjacent to the campus that could make the Route 110 business corridor one of the leading bioscience corridors in New York State. This high-paying industry, with average salaries of \$80,000 annually, is ideally suited to Long Island, where living costs are high and wages must be commensurately high.

The growth of a bioscience cluster in the Route 110 area will provide large numbers of new, high-paying jobs. The growing interactions between FSC faculty members, start-up companies at the bioscience park and local bioscience firms will benefit both the college and the community. These interactions will provide potential research grant opportunities for Farmingdale State College faculty and students. They will allow all parties to share core facilities, thereby leveraging their joint resources. They will also ensure the educational vitality and relevance of FSC's bioscience and healthcare programs by enabling these programs to incorporate cutting-edge scientific knowledge into the educational process.

As companies at the bioscience park mature, they will seek facilities in the surrounding community, motivating private developers to build additional bioscience facilities in the immediate community. This will validate and leverage New York State's past investments in the Broad Hollow Bioscience Park and in FSC's expanded academic bioscience programs. Eventually, FSC can be expected to develop its own intellectual bioscience property, thereby creating revenue for the college and the SUNY system.

The rapidity with which the Route 110 bioscience corridor grows will depend in part on future public infrastructure investments in the area. It is important to link growing bioscience firms in the Route 110 corridor with premier medical research institutions in Manhattan because these institutions will be a steady source of new technologies and start-up companies for the bioscience park. This connection is necessary because bioscience start-up companies require close linkages to the institutions that developed the technologies on which they are based.

A reopened Long Island Railroad station just south of the campus near Route 110 would do much to facilitate these physical linkages particularly if a dedicated bus ran from the campus to the reopened railroad station. Private development, including research facilities and housing for those employed in the bioscience industry, would then be possible in the area surrounding the LIRR station and extending toward the Farmingdale campus. Such transit-friendly development would go a long way toward supporting development of a viable bioscience cluster in the Route 110 area of Suffolk County.

## FSC's Future Role in Promoting Alternative Energy Technologies

The Federal government is expected to make major investments in the development of alternative energy sources to achieve energy independence and jumpstart the flagging economy. FSC faculty is already engaged in cutting edge energy research. One faculty group in the School of Engineering Technologies is working on hydrogen fuel cell technology, primarily to power vehicles. This research has already yielded two patents for fuel cells. A second faculty research group is working on solar energy. This faculty group has expertise in the photovoltaic aspects of solar energy, the mechanism for converting sunlight to electricity. Teaching, research and development of alternative energy systems will continue to be a central function of the faculty in the School of Engineering Technologies. FSC is a member of the consortium that has formed the Advanced Energy Research and Technology Center at Stony Brook. It also has multiple affiliations with Brookhaven National Laboratory and Stony Brook University in the area of energy research.

FSC has proposed the establishment of a **Green Building Institute** to encourage and aid in the design and construction of buildings that conform to high environmental and sustainable principles. This new institute, for which funding is pending, will be a center for research and service to the building industry of Long Island.

# FSC's Future Academic Role in Generating Scientists with Managerial Skills

FSC has embarked on planning to establish three Masters Degree Programs that will help its students develop the professional skills required for creative leadership in the business world. These degrees will prepare graduates for positions that combine their advanced scientific knowledge with business acumen and expansive thinking. The goal is to create a new generation of scientists who combine technical skills and scientific knowledge with business expertise, professional communication skills, interdisciplinary perspectives, and creative entrepreneurial thinking. Long Island has always had an entrepreneurial economy. Combining scientific knowledge with entrepreneurial skills is an excellent formula for translating new technologies originating in Long Island's cutting edge institutions – Cold Spring Harbor Laboratory, the State University of New York at Stony Brook, North Shore University Hospital, Brookhaven National Laboratory and others – into new and successful Long Island businesses.

## Appendix A Secondary Economic Impact of FSC Operating Expenditures, 2002-03 to 2008-09

### INDUSTRY IMPACT OF \$286,499,902 IN STATE PURPOSE SPENDING

Industry	Gross Output Increase*	Earnings Increase	Employment Increase
Agriculture/Mining	\$1,203,300	\$ 229,200	19
Utilities	8,852,847	1,633,049	15
Construction	3,953,699	1,403,850	31
Manufacturing	29,280,290	5,472,148	115
Wholesale Trade	16,158,594	4,669,948	74
Retail Trade	24,381,142	7,506,297	302
Transportation/Warehousing	9,998,847	3,638,549	95
Information	19,711,193	4,641,298	75
Finance & Insurance	29,853,290	7,391,697	104
Real Estate/Rental & Leasing	88,127,370	6,474,898	257
Professional/Scientific/Technical Services	18,307,344	7,334,397	128
Management of Companies	5,071,048	2,005,499	21
Administrative/Waste Management Services	17,734,344	6,446,248	231
Educational Services	292,029,350	128,924,956	4,132
Health Care/Social Assistance	28,879,190	12,605,996	301
Arts/Entertainment/Recreation	4,154,249	1,518,449	69
Accommodation & Food Services	12,577,346	4,268,849	256
Other Services	13,952,545	4,182,899	152
Households	0	257,850	17
<b>Total</b>	<b>624,225,986</b>	<b>210,606,078</b>	<b>6,392</b>

\*Includes original expenditure;

Source: Computations based on RIMS II input-output model

## INDUSTRY IMPACT OF \$28,162,882 IN SPENDING BY ECONOMIC OPPORTUNITY CENTER

Industry	Gross Output Increase*	Earnings Increase	Employment Increase
Agriculture/Mining	\$118,284	\$22,530	2
Utilities	870,233	160,528	1
Construction	388,648	137,998	3
Manufacturing	2,878,247	537,911	11
Wholesale Trade	1,588,387	459,055	7
Retail Trade	2,396,661	737,868	30
Transportation/Warehousing	982,885	357,669	9
Information	1,937,606	456,239	7
Finance & Insurance	2,934,572	726,602	10
Real Estate/Rental & Leasing	8,662,903	636,481	25
Professional/Scientific/Technical Services	1,799,608	720,970	13
Management of Companies	498,483	197,140	2
Administrative/Waste Management Services	1,743,282	633,665	23
Educational Services	28,706,426	12,673,297	406
Health Care/Social Assistance	2,838,819	1,239,167	30
Arts/Entertainment/Recreation	408,362	149,263	7
Accommodation & Food Services	1,236,351	419,627	25
Other Services	1,371,532	411,178	15
Households	0	25,347	2
<b>Total</b>	<b>118,284</b>	<b>22,530</b>	<b>628</b>

\*Includes original expenditure;

Source: Computations based on RIMS II input-output model

## INDUSTRY IMPACT OF \$8,162,414 IN SPENDING ASSOCIATED WITH RESIDENCE HALLS

Industry	Gross Output Increase*	Earnings Increase	Employment Increase
Agriculture/Mining	\$34,282	\$6,530	1
Utilities	252,219	46,526	0
Construction	112,641	39,996	1
Manufacturing	834,199	155,902	3
Wholesale Trade	460,360	133,047	2
Retail Trade	694,621	213,855	9
Transportation/Warehousing	284,868	103,663	3
Information	561,574	132,231	2
Finance & Insurance	850,524	210,590	3
Real Estate/Rental & Leasing	2,510,759	184,471	7
Professional/Scientific/Technical Services	521,578	208,958	4
Management of Companies	144,475	57,137	1
Administrative/Waste Management Services	505,253	183,654	7
Educational Services	8,319,949	3,673,086	118
Health Care/Social Assistance	822,771	359,146	9
Arts/Entertainment/Recreation	118,355	43,261	2
Accommodation & Food Services	358,330	121,620	7
Other Services	397,510	119,171	4
Households	0	7,346	0
<b>Total</b>	<b>17,784,268</b>	<b>6,000,191</b>	<b>182</b>

\*Includes original expenditure

Source: Computations based on industry multipliers in the RIMS II input-output model

## INDUSTRY IMPACT OF \$10,259,360 IN SPENDING ASSOCIATED WITH SUMMER PROGRAM

Industry	Gross Output Increase*	Earnings Increase	Employment Increase
Agriculture/Mining	\$43,089	\$8,207	1
Utilities	317,014	58,478	1
Construction	141,579	50,271	1
Manufacturing	1,048,507	195,954	4
Wholesale Trade	578,628	167,228	3
Retail Trade	873,072	268,795	11
Transportation/Warehousing	358,052	130,294	3
Information	705,844	166,202	3
Finance & Insurance	1,069,025	264,691	4
Real Estate/Rental & Leasing	3,155,779	231,862	9
Professional/Scientific/Technical Services	655,573	262,640	5
Management of Companies	181,591	71,816	1
Administrative/Waste Management Services	635,054	230,836	8
Educational Services	10,457,366	4,616,712	148
Health Care/Social Assistance	1,034,143	451,412	11
Arts/Entertainment/Recreation	148,761	54,375	2
Accommodation & Food Services	450,386	152,864	9
Other Services	499,631	149,787	5
Households	0	9,233	1
<b>Total</b>	<b>22,353,094</b>	<b>7,541,656</b>	<b>229</b>

\*Includes original expenditure

Source: Computations based on industry multipliers in the RIMS II input-output model

## Appendix B

### The Secondary Economic Impact of FSC Capital Expenditures, 1999 Through 2010

#### INDUSTRY IMPACT OF \$18,902,096 IN DESIGN EXPENDITURES

Industry	Gross Output Increase*	Earnings Increase	Employment Increase
Agriculture/Mining	\$66,157	\$13,231	1
Utilities	415,846	77,499	1
Construction	141,766	49,145	1
Manufacturing	1,253,209	230,606	5
Wholesale Trade	737,182	213,594	3
Retail Trade	1,432,779	440,419	18
Transportation/Warehousing	633,220	240,057	6
Information	960,226	234,386	4
Finance & Insurance	1,661,494	395,054	6
Real Estate/Rental & Leasing	2,761,596	156,887	6
Professional/Scientific/Technical Services	20,805,537	8,545,638	159
Management of Companies	342,128	136,095	1
Administrative/Waste Management Services	1,207,844	470,662	17
Educational Services	226,825	92,620	3
Health Care/Social Assistance	1,723,871	752,303	18
Arts/Entertainment/Recreation	224,935	83,169	4
Accommodation & Food Services	706,938	240,057	14
Other Services	652,124	192,801	7
Households	0	13,232	1
<b>Total</b>	<b>35,953,677</b>	<b>12,577,455</b>	<b>275</b>

\*Includes original expenditure; Source: Computations based on RIMS II input-output model

## INDUSTRY IMPACT OF \$142,897,975 IN CONSTRUCTION EXPENDITURES

Industry	Gross Output Increase*	Earnings Increase	Employment Increase
Agriculture/Mining	\$714,490	\$171,478	8
Utilities	3,258,074	600,171	5
Construction	143,826,812	50,971,708	1,137
Manufacturing	24,049,729	4,644,184	96
Wholesale Trade	10,774,507	3,115,176	50
Retail Trade	18,162,333	5,587,311	225
Transportation/Warehousing	4,572,735	1,471,849	37
Information	6,601,886	1,571,878	24
Finance & Insurance	14,046,871	3,358,102	48
Real Estate/Rental & Leasing	18,390,969	1,043,155	37
Professional/Scientific/Technical Services	11,217,491	4,687,054	84
Management of Companies	3,215,204	1,271,792	13
Administrative/Waste Management Services	5,301,515	2,000,572	73
Educational Services	1,529,008	628,751	23
Health Care/Social Assistance	12,474,993	5,444,413	130
Arts/Entertainment/Recreation	1,471,849	543,012	24
Accommodation & Food Services	4,544,156	1,543,298	93
Other Services	5,687,341	1,700,486	60
Households	0	101,168	8
<b>Total</b>	<b>289,839,963</b>	<b>90,455,448</b>	<b>2,171</b>

\*Includes original expenditure;

Source: Computations based on RIMS II input-output model

## INDUSTRY IMPACT OF \$11,397,419 IN EQUIPMENT EXPENDITURES

Industry	Gross Output Increase*	Earnings Increase	Employment Increase
Agriculture/Mining	\$36,472	\$6,838	1
Utilities	377,255	69,524	1
Construction	118,533	42,170	1
Manufacturing	914,073	172,101	4
Wholesale Trade	495,788	142,468	5
Retail Trade	12,222,592	3,763,428	148
Transportation/Warehousing	419,425	153,865	4
Information	759,068	192,616	3
Finance & Insurance	1,029,187	238,206	3
Real Estate/Rental & Leasing	1,928,443	127,651	5
Professional/Scientific/Technical Services	744,251	303,171	5
Management of Companies	891,278	353,320	4
Administrative/Waste Management Services	537,958	196,036	7
Educational Services	113,974	46,729	2
Health Care/Social Assistance	890,138	388,652	9
Arts/Entertainment/Recreation	119,673	44,450	2
Accommodation & Food Services	360,158	121,952	7
Other Services	402,330	119,673	4
Households	0	6,840	1
<b>Total</b>	<b>22,360,596</b>	<b>6,489,690</b>	<b>216</b>

\*Includes original expenditure;

Source: Computations based on RIMS II input-output model



Horticultural Teaching Gardens  
at Farmingdale State College.

# Farmingdale State College

State University of New York

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