Proposal
To Establish a Master of Science in
Information Systems

Anticipated Start
Spring 2012

Approved by the
School of Professional Studies Curriculum Committee
July 15, 2010

Approved by the
School of Professional Studies Governing Council
September 10, 2010

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Dean's Signature

[Signature]
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CUNY School of Professional Studies
Approved by the School of Professional Studies Curriculum Committee, July 15, 2010
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I. **ABSTRACT**

The Graduate School and University Center of The City University of New York (CUNY), through the School of Professional Studies (SPS), proposes to launch a new online Master of Science degree program in Information Systems. The goal of the degree is to prepare students to develop and apply the theories, tools, and techniques of information systems, analytics, and technology management to address complex business and social problems. Tracks within the degree will offer students the opportunity to specialize in areas where the impact of information systems is especially noteworthy. The first track will be in the area of urban sustainability. Students will also have the option to not specialize and pursue a general information systems program.
II. SED APPLICATION FOR REGISTRATION OF A NEW PROGRAM
# Proposal to Establish a Master of Science in Information Systems

CUNY School of Professional Studies

Approved by the School of Professional Studies Curriculum Committee, July 15, 2010
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## Application for Registration of a New Program

This application is for New York degree-granting institutions seeking to register a new program that is below the doctoral level. Save this file, enter the requested information, and submit to the State Education Department.

- Proposals for new distance education, teacher certification, educational leadership certification, and professional licensure programs may require additional information, in addition to this core application.
- Certificate and advanced certificate proposals: use the certificate forms at [www.highered.nysed.gov/ocue](http://www.highered.nysed.gov/ocue). This expedited option is not available for teacher, educational leader, or professional certification/licensure programs.

<table>
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<td>Program to prepare certified teachers or certified educational leaders</td>
</tr>
<tr>
<td></td>
<td>Program to prepare licensed professionals</td>
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<tr>
<td>Institution name and address</td>
<td>CUNY School of Professional Studies</td>
</tr>
<tr>
<td></td>
<td>Graduate School and University Center</td>
</tr>
<tr>
<td></td>
<td>365 Fifth Avenue, Suite 3300, New York, NY 10016</td>
</tr>
<tr>
<td>Program title, award, credits, and proposed HEGIS code</td>
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</tr>
<tr>
<td></td>
<td>Award (e.g., B.A., M.S.): M.S.</td>
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<tr>
<td></td>
<td>Credits: 36</td>
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<tr>
<td></td>
<td>Proposed HEGIS code:</td>
</tr>
<tr>
<td>Program format</td>
<td>Check all program scheduling and format features that apply: (See definitions)</td>
</tr>
<tr>
<td></td>
<td>i) Format: _Day _Evening _Weekend _Evening/Weekend</td>
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<tr>
<td></td>
<td>ii) Mode: _Standard _Independent Study _External _Accelerated</td>
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<tr>
<td></td>
<td>X Distance Education (submit distance education application with this proposal)</td>
</tr>
<tr>
<td></td>
<td>iii) Other: _Bilingual _Language Other Than English _Upper Division Program</td>
</tr>
<tr>
<td>Diploma Programs</td>
<td>If the program is credit bearing and will lead to a Diploma or Advanced Diploma, indicate the registered degree program(s) to which the credits will apply:</td>
</tr>
<tr>
<td>Contact person for this proposal</td>
<td>Name and title: George Otte, Associate Dean of Academic Affairs</td>
</tr>
<tr>
<td></td>
<td>Telephone: 212 617-7145 Fax: 212 617-2990</td>
</tr>
<tr>
<td></td>
<td>E-mail: <a href="mailto:George.Otte@mail.cuny.edu">George.Otte@mail.cuny.edu</a></td>
</tr>
<tr>
<td>CEO (or designee) approval</td>
<td>Name and title: George Otte, Associate Dean of Academic Affairs</td>
</tr>
<tr>
<td></td>
<td>Signature and date: 4/6/11</td>
</tr>
<tr>
<td>Signature affirms the institution’s</td>
<td>Partner institution’s name:</td>
</tr>
<tr>
<td></td>
<td>Name and title of partner institution’s CEO:</td>
</tr>
</tbody>
</table>
Partner institution’s name:
Name and title of partner institution’s CEO:
Signature of partner institution’s CEO:

Program registration is based on standards in the Regulations of the Commissioner of Education. Section 52.1 defines the curricula that must be registered. The Department registers individual curricula rather than the institution as a whole, but the registration process addresses major institutional elements. It is the chief means by which the Regents support the quality of college and university programs.

Please enter the requested information about the proposed program. Answer rows will expand as needed when information is entered. Application addenda for professional licensure, teacher certification, and educational leadership certification programs contain additional items and direction.

1. Program Description and Purpose

   a) Provide a brief description of the program as it will appear in the institution’s catalog.
   
   Answer included in narrative.

   b) List educational and (if appropriate) career objectives.
   
   Answer included in narrative.

   c) How does the program relate to the institution’s mission and/or master plan?
   
   Answer included in narrative.

   d) Describe the role of faculty in the program’s design.
   
   Answer included in narrative.

   e) Describe the input by external partners, if any (e.g., employers and institutions offering further education).
   
   Answer included in narrative.

   f) What are the anticipated Year 1 through Year 5 enrollments?
   
   Answer included in narrative.

2. Sample Program Schedule

   Complete Table 1a (for undergraduate programs) or Table 1b (for graduate programs).

   - If the program will be offered through a nontraditional schedule, provide a brief explanation of the schedule, including its impact on financial aid eligibility.

   - For existing courses that are a part of the major, submit a copy of the catalog description. For undergraduate programs, provide syllabi for all new courses in the major; for graduate programs, provide syllabi for all new courses. Syllabi should include a course description and identify course credit, objectives, topics, student outcomes, texts/resources, and the basis for determining grades.

3. Faculty

   a) Complete the faculty tables that describe full-time faculty (Table 2), part-time faculty (Table 3), and faculty to be hired (Table 4), as applicable. Faculty curricula vitae should be provided only by request.

   b) What is the institution’s definition of “full-time” faculty?

   Answer included in narrative.
4. Financial Resources and Instructional Facilities
   a) Summarize the instructional facilities and equipment committed to ensure the success of the program.
      Answer included in narrative.
   b) Complete the new resources table (Table 5).

5. Library Resources
   a) Summarize the analysis of library resources for this program by the collection librarian and program faculty.
      Include an assessment of existing library resources and their accessibility to students.
      Answer included in narrative.
   b) Describe the institution's response to identified needs and its plan for library development.
      Answer included in narrative.

6. Admissions
   a) List all program admission requirements (or note if identical to the institution's admission requirements).
      Answer included in narrative.
   b) Describe the process for evaluating exceptions to those requirements.
      Answer included in narrative.
   c) How will the institution encourage enrollment by persons from groups historically underrepresented in the discipline or occupation?
      Answer included in narrative.

7. Academic Support Services
   Summarize the academic support services available to help students succeed in the program.
   Answer included in narrative.

8. External Review of Graduate Degree Programs
   If the proposal is a graduate degree program below the doctoral level, submit a copy of an evaluation (Word) (PDF) of the program by a recognized expert in the field who has been approved in advance by the State Education Department. In addition, submit the institution's response to the evaluation and highlight how the proposal was modified in response to the reviewer's comments.

9. Credit for Experience
   If this program will grant substantial credit for learning derived from experience, describe the methods of evaluating the learning and the maximum number of credits allowed.
   Answer included in narrative.

Items 10 through 12 are for general academic and professional licensure program proposals only.

10. Program Assessment and Improvement
    Summarize the plan for periodic evaluation of the new program, including the use of data to inform program improvement.

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11. New/Emerging Field and Allied Health Areas (Undergraduate Degree Programs)

If the proposal for an undergraduate degree program falls into any of the following categories, submit a copy of an evaluation (Word) (PDF) of the program by a recognized expert in the field who has been approved in advance by the State Education Department. In addition, submit the institution’s response to the evaluation and highlight how the proposal was modified in response to the reviewer’s comments. Categories:

- The program's subject matter represents a new or emerging field.
- The program is in an allied health area, unless the institution can demonstrate that the program is accredited by an accrediting body for college-level programs in the field.

12. Transfer to Baccalaureate Programs

If the program will be promoted as preparing students for transfer to a baccalaureate program, provide a copy of an articulation agreement with at least one institution.
III. PROGRAM PURPOSE AND GOALS

Program Description
The Master of Science degree program in Information Systems is intended to produce information systems specialists who can not only develop and maintain the complex information systems upon which business and government depend, but also analyze the data within the systems to better meet organizational goals. The complexity of systems and sheer volume of data being collected today, growing exponentially, require that students not only be skilled in the architecture of systems but in how to model complex systems and use data to solve problems. Courses in modeling, simulation, analysis, and visualization of data will teach students to leverage the information flows that undergird complex systems in ways that ensure optimal business and social outcomes. Students in the program will develop skills in areas such as real-time programming, which will enable them to build and maintain the applications and computing environments needed to help entities of all kinds, from small companies to large cities, operate more effectively and efficiently. Through current topics courses, students will be able to stay abreast of changes in the rapidly evolving field of information systems.

Tracks within the degree will offer students the opportunity to specialize in areas where the impact of information systems is especially noteworthy. The first track will be in the area of urban sustainability. This will be followed by other tracks, such as in health information and business intelligence. Students will also have the option to not specialize and pursue a general information systems program.

Educational Objectives and Career Objectives
Upon completion of the degree, students will have developed the abilities to:

- Analyze a business or social problem from a systems perspective and define, design, implement, and evaluate a computer-based system that can solve the problem
- Apply advanced information systems tools—real-time programming, simulation and mathematical modeling, data visualization, and human-computer interface design—to solve business or social problems
- Identify strategic business opportunities to which computing technology may be applied based on the organization’s short- and long-term goals
- Apply management skills such as project management, business strategy, and managing technical change to different work environments
- Communicate effectively, in oral and written forms, and function effectively on teams

The program is expected to secure technical and managerial positions for its graduates—e.g., information systems analyst, software application engineer, software systems engineer, software architect, software developer, business analyst—in private-sector companies, government agencies, and the non-profit sector. Graduates who opt for the track in urban sustainability may find themselves working on systems such as smart electricity grids, building control systems, sensor networks, complex computing grids, and pollution monitoring systems,
among others. More detail on job prospects is provided in Section II, Need and Justification and Appendix XIV, Evidence of Jobs.

Educational Trends
There are a number of trends within the world of higher education that offer support for this proposal.

Growing interest in computing disciplines: There is a growing demand for graduate-level education in general and more specifically in the physical sciences and the computing and information disciplines.¹ The Institute of Education Sciences reports that between 1997 and 2007 there was a 54% increase in the number of graduate degrees awarded in computer and information sciences and support services.² Furthermore, the pipeline of candidates coming out of undergraduate computer science, computer engineering, and information systems programs is once again expanding as enrollment rises for the second year in a row after years of post-9/11 decline.³ This speaks directly to the need for more graduate information systems degrees.

More specialized and interdisciplinary professional master’s degree programs: A recent article in The New York Times highlights the growth in specialized master’s degrees to “fit every niche and new twist in the culture,” with many also meant to address the needs of a changing economic landscape. Within the computing disciplines specifically, there has also been a move toward reimagining traditional computing curriculum by creating new, more interdisciplinary degrees.⁴ For example, Carnegie Mellon offers a Master of Science degree in Computational Biology, Columbia University offers a Master of Science degree in Computer Science and Journalism, and the University of Dallas offers both undergraduate and graduate degrees that exist at the convergence of computer science, engineering, creative arts, and the humanities. This integration of computing and another discipline is also happening here at CUNY, where, for example, City College offers a Master of Science degree in Information Systems where students can specialize in medical informatics or financial computing.

Growing number of degrees built around issues of sustainability. A 2009 Newsweek article notes that universities recently launched at least 27 sustainability-themed programs, degrees, or certificates, while in 2005 there were just three. Arizona State, the first university in the nation with an entire school dedicated to sustainability, has seen enrollment surpass expectations since opening in 2007. To support the linkage between computing and sustainability, in 2008 the National Science Foundation, through its Expeditions in Computing program, invested in a

¹ Council of Graduate Schools, Graduate Enrollment and Degrees: 1998 to 2008
$10 million project to seed the development of a new interdisciplinary academic field called computational sustainability, the goal of which is “to apply techniques from computer science, information science, operations research, applied mathematics, and statistics for balancing environmental, economic, and societal needs for sustainable development.” The Cornell Institute for Computational Sustainability was launched in collaboration with other institutions, including Oregon State University, Ohio State University, Bowdoin College, Howard University, Pacific Northwest National Lab, and The Conservation Fund.

We believe that these trends in concert hold promise for the success of the proposed degree. A newly growing interest in the computing disciplines at the undergraduate level, the proliferation of degrees that couple technology skills with disciplinary knowledge from specific fields of practice, and growing interest in the discipline of sustainability, suggests that there is an opportunity and need for a new information systems degree that will offer students the opportunity to specialize in various tracks. The first track in urban sustainability will take advantage of the growing broad-based interest in this topic among students, on the demand side, and businesses, government, and other civil society actors on the supply side.

Role of Faculty in Program Design
A cadre of faculty, listed in the table below, came together to help design and develop the program of instruction for this master’s degree, which addresses the research on jobs data and employment trends that we discuss later. The faculty represent a broad range of academic disciplines including computer science, business, engineering, energy services, and geography. Such faculty will form the consortial faculty of the program, overseeing it as well as teaching in it. Faculty collaboration across disciplines was and will continue to be important in course design, given the interdisciplinary nature of the course offerings. The enthusiasm and commitment of faculty to this emerging discipline will ensure the success of the program and its students.

<table>
<thead>
<tr>
<th>Faculty Participals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
</tr>
<tr>
<td>Michael Bobker, M.Sc., CEM, OPMP</td>
</tr>
<tr>
<td>Dr. Ted Brown</td>
</tr>
<tr>
<td>Dr. Barbara H. Edington, PMP</td>
</tr>
<tr>
<td>Dr. Nancy Griffeth</td>
</tr>
<tr>
<td>Dr. Camille N. Kamga</td>
</tr>
<tr>
<td>Dr. Mete Kok</td>
</tr>
<tr>
<td>Dr. William Duncan Solecki</td>
</tr>
<tr>
<td>Dr. Abdullah Uz Tansel</td>
</tr>
<tr>
<td>Dr. Felisa J. Vazquez-Abad</td>
</tr>
</tbody>
</table>

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Role of External Partners in Program Design
The School of Professional Studies consulted with external groups in the early stages of program development. We spoke to numerous staff people at IBM, who offered invaluable feedback. Dr. Jane Snowdon, a senior manager and research staff member at IBM, volunteered to serve on the curriculum committee and to provide opportunities for internships, workshops, and research fellowships. We also spoke to contacts at Brookhaven National Lab, Cleantech Corridor, an association of entrepreneurs, investors, and businesses in New York City working on clean tech issues, and the New York Tech Council, a professional association for technology companies in NYC, as well as the city agencies of the Department of Information Technology and Telecommunications and the Department of Citywide Administrative Services.

Effect on the School of Professional Studies
The program fits well into SPS’s strategic plan of establishing areas of programmatic competence, which will 1) aid in creating flagship degrees, 2) support the development of truly interdisciplinary academic degrees, and 3) help to leverage faculty and administrative resources across multiple programs.

Program Relationship to School Mission
The School of Professional Studies is the perfect venue for this degree. Through SPS, CUNY has a comprehensive and flexible approach to meeting emerging educational needs. SPS has successfully launched six degree programs since 2003, including CUNY’s first fully online degrees. Currently, the School’s academic programs include four graduate degrees—an online master’s degree in business management and leadership and three face-to-face master’s degree programs in applied theatre, labor studies, and disabilities studies. In addition, SPS offers two online bachelor’s degrees—one in communication and culture and another in business. Beyond degrees, the School provides working New Yorkers with a host of credit and non-credit professional development certificate programs. SPS has a successful track record of delivering quality online instruction, and doing so with careful attention to a full range of support services (so critical to any online degree).

SPS shares in the CUNY mission of “providing first-rate academic opportunities for students of all backgrounds.” Equally important, this program is in perfect alignment with the University’s Decade of Science (2005-2015) initiative with its focus on research and education in Science, Technology, Engineering, and Mathematics (STEM). The online nature of this degree only underscores these points. Not only is it more broadly accessible to working New Yorkers than a traditional face-to-face degree program, it has the potential to enroll students from across the country.

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5 The City University of New York website. As of 1/12/10. http://www.cuny.edu/about/index.html
IV. NEED AND JUSTIFICATION

Information technology today is not only becoming increasingly ubiquitous, it’s contributing more and more to societal and business innovation as well as economic growth. According to the World Bank World Development Indicators, the U.S. spent over $990 billion on information technology in 2009, more than any other country. This accounted for over one-quarter of total spending for all countries, and even in the midst of global recession, represented a decline of just 4 percent from 2008. Over the last five years, spending on information technology has consistently accounted for 7 percent of U.S. GDP, again, a larger share than any other country.

While up until recently it was possible to isolate the impacts of the computing sector to certain industries or parts of the economy, that is increasingly difficult, as information technology has become increasingly integrated into all parts of the economy. According to the Organization for Economic Cooperation and Development’s (OECD) Information Technology Outlook 2010, the goals of information technology have essentially become the goals of the broader economy, “underpinning growth and jobs, increasing productivity, enhancing delivery of public and private services, and achieving broad socio-economic objectives in the areas of health care, education, climate change, energy efficiency, employment, and social development.” 6

This integration of IT across the economy has already begun to transform different industries and spur innovation, a trend that will only become more acute in the coming years. According to a report by Institute for the Future, a non-profit organization that tracks technology trends, while the innovations of the last generation were driven by advances in materials science, like plastics, the innovations of the coming generation will be driven by advances in information and communications technologies. “The materials revolution produced the automobile and the highway system, but the digital information revolution is creating intelligent transportation systems and is letting us “digitally travel” through telecommuting and tele-conferencing. The materials revolution produced the telephone, but the digital information revolution is allowing ubiquitous communication from a wide range of devices and places.” 7

The conditions that we see today are not just different than they were, say, ten years ago in the heyday of the internet; the convergences among some technological developments are offering opportunities for rapid innovation. The experts generally concur about the most transformative computing trends of recent years. At the 2011 World Economic Forum just held in Davos, Mark Spelman, the head of global strategy for Accenture, discussed three opportunities for economic growth in the coming years, and one of them was in information technology. He cited a number of trends that will drive this growth, including cloud computing, widespread high-speed

broadband, mobile sensors, and analytics. His assessment was in line with that of Forrester, a leading market research group, which expects the IT sector to experience significant growth in the coming years due to what it calls a “fourth wave” of innovation. This “fourth wave,” it predicts, will result from the convergence of new software architectures; powerful data center operations; fast wireless and broadband communications; and small, powerful, plentiful, and networked client devices—all of which will “work together in unprecedented ways to solve smarter and more complex business problems that the last generation of computing could not address.”

To elaborate on some of these key trends a little further:

**Massive quantities of data:** Spurred by the development of cheaper and more advanced data collection devices like sensors, cameras, GPS, and RFID tags, we have more data being collected from more sources than ever before. One estimate of the amount of digital information that will be created by the year 2020 is 35 trillion gigabytes.

**Cheap computing power and storage capacity:** Though the quantity of data being collected today is massive and growing, we have greater abilities than ever before to both process the data and store it. Data analysis that would have taken days in the past can now be done in seconds, and data that would have required large and expensive storage devices can today be stored cheaply and easily. New, affordable technologies like cloud computing and virtualization are also lowering barriers to data capture and management.

**High speed data transmission:** Not only can we store and process data easily, we can also transmit it from point A to B faster than ever, made possible by the proliferation of high speed data transmission networks. The ability to transmit data is in turn fuelling more data capture, as the ability to collaborate on large data sets now transcends geographic barriers.

But this ability to capture, store, and transmit data is likely to drive only so much innovation. Future innovation is likely to hinge on the ability to analyze this data and apply this analysis to business decisions. This has come to be referred to as “smart” computing or “intelligent” computing. Forrester, which uses the name smart computing, defines it as “a new generation of integrated hardware, software, and network technologies that provide IT systems with real-time awareness of the real world and advanced analytics to help people make more intelligent decisions about alternatives and actions that will optimize business processes and business balance sheet results.” Forrester has also predicted that “smart computing [will] be the next major cycle of technology adoption and digestion...with investment growing at twice the rate of the overall economy.”

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10 Bartels (2009).
The OECD also acknowledges the significance of smart computing in the coming years, specifically as it connects to a growing concern for sustainability among businesses and governments. Its positive forecast for the IT sector (which it refers to by the name information and communications technology, or ICT) is in part a result of its belief that “the potential for ICTs to contribute to ‘green growth’ through ‘smart’ applications in buildings, transport, energy and production will translate into development of and demand for new applications.”\(^1\)

The convergence of these trends will create new opportunities for information and communications technology workers who have exposure to the hardware, software, networking, and analytic techniques that in combination are transforming the economy by making systems and processes smarter and more sustainable.

There are numerous examples of smart computing applications in operation today. We have transportation systems that use sensors and cameras combined with variable pricing schemes to regulate traffic flow, all electronically and some in real time, in order to reduce congestion and its negative environmental impacts. We have utility smart metering systems that provide real-time two-way data transmission—allowing utilities to monitor aggregate consumer demand and consumers to see real-time pricing to decide when to express their demand. We also have electronic health records that allow health care providers to view a patient’s treatment history and make decisions about future treatment based on an analysis of other patients’ treatment histories and outcomes.

This new master’s degree will prepare students for long-term careers in developing, analyzing, and managing the technology systems and infrastructures like those noted above. The software analyst and systems engineer developing the monitoring and tracking software applications on which the congestion pricing system is based, the business analyst analyzing the data from the smart meter program to improve program performance, the information architect developing the health information system—these are the types of professionals this degree will produce.

**Growth in Jobs**

According to *Occupational Employment Projections to 2018* issued by the Bureau of Labor Statistics (BLS), the forecast for IT jobs looks healthy in the years ahead.\(^2\) Of the ten job titles that comprise the information technology field, all but one shows positive growth between 2008 and 2018, see table below. Three of the fastest growing titles—Network Systems and Data Communications Analysts (53% growth); Computer Software Engineers (33% growth); Computer Systems Analysts (20% growth)—are job titles that will be most suited to graduates of this Information Systems degree program. Another fast growing field categorized under the mathematical science titles, Operations Research Analyst, is another job title for which the

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\(^1\) OECD (2010).

graduates of this degree will be suited. Jobs in this area are expected to grow 22% in the same ten-year timeframe.

Overall, the BLS projections equate to an increase of over 750,000 IT jobs by 2018—an average growth rate among all titles of 22%. The BLS also notes the increasing importance of business skills among IT workers, as “business aptitude is useful as profitability, project management, and cost-benefit analyses increasingly become the responsibility of a number of IT workers.” This degree includes two courses typical of business degrees. A course on managing innovation and strategy allows students to explore concepts like innovation, business strategy, value creation, and business performance and how technology can be used to support these concepts. And a course on project management teaches students general project management concepts and how to apply these concepts to software development projects. While just these two courses will be offered at the outset, more such business-oriented courses may be added as time goes by.

### Bureau of Labor Statistics Projections for Information Technology Titles

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<th>Certification</th>
<th>2008</th>
<th>2018</th>
<th>2008</th>
<th>2018</th>
<th>Number</th>
<th>Percent</th>
<th>Total job openings due to growth and replacement</th>
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<td>3,424.30</td>
<td>4,187.00</td>
<td>2.3</td>
<td>2.5</td>
<td>762.7</td>
<td>22.3</td>
<td>1,383.60</td>
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<tr>
<td>Computer and information scientists, research</td>
<td>28.90</td>
<td>35.9</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>24.2</td>
<td>13.2</td>
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<tr>
<td>Computer programmers</td>
<td>426.7</td>
<td>414.4</td>
<td>0.3</td>
<td>0.2</td>
<td>–12.3</td>
<td>–2.9</td>
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<td>Computer software engineers</td>
<td>909.6</td>
<td>1,204.80</td>
<td>0.6</td>
<td>0.7</td>
<td>295.2</td>
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</tr>
<tr>
<td>Computer software engineers, applications</td>
<td>514.8</td>
<td>689.9</td>
<td>0.3</td>
<td>0.4</td>
<td>175.1</td>
<td>34</td>
<td>218.4</td>
</tr>
<tr>
<td>Computer software engineers, systems software</td>
<td>394.8</td>
<td>515</td>
<td>0.3</td>
<td>0.3</td>
<td>120.2</td>
<td>30.4</td>
<td>153.4</td>
</tr>
<tr>
<td>Computer support specialists</td>
<td>565.7</td>
<td>643.7</td>
<td>0.4</td>
<td>0.4</td>
<td>78</td>
<td>13.8</td>
<td>234.6</td>
</tr>
<tr>
<td>Computer systems analysts</td>
<td>532.2</td>
<td>640.3</td>
<td>0.4</td>
<td>0.4</td>
<td>108.1</td>
<td>20.3</td>
<td>222.8</td>
</tr>
<tr>
<td>Database administrators</td>
<td>120.4</td>
<td>144.7</td>
<td>0.1</td>
<td>0.1</td>
<td>24.4</td>
<td>20.3</td>
<td>44.4</td>
</tr>
<tr>
<td>Network and computer systems administrators</td>
<td>339.5</td>
<td>418.4</td>
<td>0.2</td>
<td>0.3</td>
<td>78.9</td>
<td>23.2</td>
<td>135.5</td>
</tr>
<tr>
<td>Network systems and data communications analysts</td>
<td>292</td>
<td>447.8</td>
<td>0.2</td>
<td>0.3</td>
<td>155.8</td>
<td>53.4</td>
<td>208.3</td>
</tr>
<tr>
<td>All other computer specialists</td>
<td>209.3</td>
<td>236.8</td>
<td>0.1</td>
<td>0.1</td>
<td>27.5</td>
<td>13.1</td>
<td>72.6</td>
</tr>
</tbody>
</table>

Some of this job growth among computing titles is also tied to the “greening” of the economy. The Occupational Information Network (ONET) notes that the green economy is expected to increase demand for Computer Software Engineers and several job titles associated with programming proficiency in GIS (Geographic Information Systems). ONET also notes that many occupations are likely to change as green technologies and activities transform many industries and workplaces. In anticipation of technology being increasingly applied to achieve sustainability goals, the degree will be launched with a track in urban sustainability.

Other labor market observers also note trends that provide further evidence of the importance of the skills this degree will impart on its graduates. According to Marina Gorbis, executive director of the Institute for the Future, “with a growing number of video cameras, radio-frequency identification chips (RFID) and sensors gushing data, hot jobs will spring up, creating a demand for
people who can cope and build new ways to comprehend it.”\textsuperscript{13} Forrester makes a similar assertion. “Of the five A’s of Smart Computing, it is awareness and analysis technologies that will be the differentiators for vendors initially ...successful vendors will need to have employees with statistical analysis skills, who can design and set up the systems to create awareness of asset status, structure the analysis of this data, define rules and workflow, and identify the right applications to initiate the appropriate actions.”\textsuperscript{14} In both cases, graduates of this program, especially given the more analytic and computational nature of the program, will be well-positioned to vie for the kinds of jobs the economy will likely be producing more of in the future.

Some recent headlines also offer encouraging insights into the strength of the technology sector, and therefore the potential job prospects for graduates of this program. As reported in \textit{ComputerWorld} in January, hiring and wages in the tech sector were up at the end of 2010, and the forecast for 2011 was strong.\textsuperscript{15} Furthermore, the article also noted that job growth was occurring primarily in management and technical consulting services and computer system design and related services—some of the job categories that graduates of the proposed program will be qualified to fill. So far in 2011, the tech sector continues to look very promising. The \textit{Wall Street Journal} reported in February on shortages in the IT sphere for workers possessing certain unique skill sets, which tends to be driving up wages.\textsuperscript{16} And in New York City specifically, the demand for skilled IT professionals is very high, especially among startups. \textit{Wired} magazine featured an article in December that discussed the “war” for tech talent, noting that many information technology professionals find themselves having numerous attractive job offers from which to choose.\textsuperscript{17}

The table below, \textit{Available Jobs}, provides a snapshot of some of the current jobs that would be available to program graduates. Please see Appendix XIV for job descriptions.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
\textbf{Job Title} & \textbf{Job Description} \\
\hline
\end{tabular}
\end{table}

\textsuperscript{13} http://www.msnbc.msn.com/id/20284970/ns/business-future_of_business/
\textsuperscript{14} Forrester (2009).
Available Jobs

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Industry</th>
<th>Degree/Experience</th>
<th>Major Skills</th>
</tr>
</thead>
</table>
| Database Engineer                 | Health Information              | Bachelor’s degree, master’s degree in Comp. Sci. pref. | - Building and maintaining database  
|                                   |                                 |                   | - Data modeling  
|                                   |                                 |                   | - Ability to solve complex technical problems                               |
| Reporting Developer               | Technology Consulting           | Bachelor’s or master’s degree in computing/math field 3-4 years | - SQL programming  
|                                   |                                 |                   | - Data structure design  
|                                   |                                 |                   | - Life cycle project development  
|                                   |                                 |                   | - Data analysis and management                                               |
| Data Warehouse/Business Intelligence Developer | Health Information         | Bachelor’s degree, master’s degree in Comp. Sci. pref. | - SQL programming  
|                                   |                                 |                   | - Data modeling  
|                                   |                                 |                   | - Data warehousing                                                           |
| Analyst, Strategic Analytics & Modeling | Hospitality                    | Master’s degree + 1-3 yrs. exp. or bachelor’s degree + 5-6 yrs. exp. (degree in quantitative field) | - Database programming (SQL, SAS)  
|                                   |                                 |                   | - Advanced stats  
|                                   |                                 |                   | - Predictive modeling and data analytics                                     |
| Jr. Quantitative Developer        | Finance                         | Master’s degree in math, stats, or computing field | - Implement and maintain quantitative model  
|                                   |                                 |                   | - Design and develop the computer programs                                   |
| Data Scientist                    | Media                           | Master’s degree in statistical field | - Building and evaluating predictive models  
|                                   |                                 |                   | - Applied stats  
|                                   |                                 |                   | - Understanding of machine learning algorithms                               |
| Systems and Data Analyst          | IT and healthcare               | Master’s degree in computing/math field | - Data modeling  
|                                   |                                 |                   | - Data warehousing                                                           |
|                                   |                                 |                   | - Database architecture                                                      |
|                                   |                                 |                   | - Documentation and technical analysis                                       |

Jobs Related to Urban Sustainability

| Advanced Analytics & Optimization SPSS Consultant | IT/Smart Computing | Master’s degree preferred 2-3 years experience | - Advanced Excel-based modeling skills  
|                                                   |                   |                                               | - SPSS  
|                                                   |                   |                                               | - Basic knowledge in subjects of math/stats/ops research |
| GIS Energy Analyst                             | Energy and Engineering | Bachelor’s degree in related discipline, master’s degree preferred 3+ years experience | - Working knowledge of technological products/apps  
|                                                   |                   |                                               | - Excellent writing, research, communication skills |
| Smart Grid Senior Software Systems Engineer    | Energy             | BS in Systems Eng., Comp. Sci., or Software Eng., Master’s preferred 10 years exp. in architecture, design, and implementation of large scale software systems | - Skills in system and data modeling  
|                                                   |                   |                                               | - Success working with technical teams  
|                                                   |                   |                                               | - Superior analytical and communication (written and oral) skills |

Other Higher Education Programs
While there are many other information systems programs in existence, this information systems degree program is somewhat unique given its focus on computation and simulation. With that in mind, this program shares commonalities with a range of different degree programs—none of which, however, are currently offered online. Here at CUNY, Baruch College offers a Master of Science degree in Quantitative Methods and Modeling. This degree combines courses in
business with courses in advanced statistics, simulation, and modeling to teach students how to use quantitative analysis to make business decisions. And at City College, students can pursue a Master of Science degree in Information Systems where they can specialize in medical informatics or financial computing.

The University of North Carolina-Wilmington offers a Master of Science degree in Computer Science and Information Systems which, like the proposed program, is designed to attract students primarily with a background in computer science with coursework that is more technical than a typical information systems degree. North Carolina State University offers a Master of Science degree in Analytics. This degree, which draws students with bachelor’s degrees primarily in statistics, computer science, math, and business, is designed to give students a thorough understanding of the tools, methods, applications, and practice of advanced analytics. Old Dominion University offers a Master of Science degree in Modeling and Simulation. This program, which targets students with backgrounds in engineering, science, and math, prepares students for careers as simulation professionals or teachers of modeling and simulation. Johns Hopkins University offers a Master of Science degree in Information Systems Engineering. This degree, which is designed to appeal to both students with technical backgrounds and students with business backgrounds, focuses on the analysis, design, development, and integration of systems that enable the effective and efficient use of information.

Letters of Support
Please see Appendix XII for Letters of Support.

V. STUDENT INTEREST AND ENROLLMENT

Admissions Requirements
Admission to the program requires students to have a bachelor’s degree in Computer Science, Information Systems, or another STEM field (so long as the candidate also has the appropriate technical/computing experience) and a GPA of 3.0 or better. Students must also demonstrate proficiency in statistics, calculus, and programming. At a minimum, students must have earned the equivalent of a B or better in the following courses:

1. undergraduate statistics for STEM majors;
2. undergraduate differential and integral calculus;
3. three upper-division undergraduate courses that make use of a higher-level programming language; and
4. one undergraduate course in databases.

Proficiency in the above topics will also be assessed in the admissions interview, as will proficiency in oral and written communications (through a written essay and a live interview).
Admissions Interview
All applicants will be required to submit to an admissions interview (applicants outside the New York City metro area will be given the option to have a phone or online interview). The interview will be supervised by the program’s academic director or designee and will serve two purposes: 1) to ensure the program is a good fit for the candidate by discussing how the program’s objectives, structure, and requirements fit with the candidate’s goals; and 2) to further assess the candidate’s proficiency in required subject matter.

The applicant’s programming aptitude will be assessed through an examination at the time of the interview. Applicants interviewing remotely will be allowed to take the exam remotely and then meet with the academic director, again by phone or online, to explain their work and ensure authorship of the exam. The applicant’s proficiency in statistics and calculus will also be incorporated into the interview in the form of questions like “How would you validate reliability in these example survey items?” or “Integrate the following equation.”

Students who fail to exhibit proficiency in statistics, calculus, or programming will be required to take additional courses prior to starting the program, the number and specifics of which will be determined on a case-by-case basis. These courses can be taken at another CUNY campus or another college.

Admissions Exceptions
On a case-by-case basis, the faculty will consider relevant professional experience that has led the applicant to acquire programming skills and an understanding of computation and computers. For example, they may consider a student with a biology degree and no undergraduate programming courses who has been working as a programmer, assuming that he or she can demonstrate the requisite programming and computational skills.

Advisement and Support Services

Academic Advisement: Each student is assigned an academic advisor upon admission to the program, and this advisor stays with the student through graduation to maintain the consistent personal connection that is so important in online education programs. In addition, throughout the semester, students interact online with each other and with faculty; this ongoing contact ensures that there are sufficient informal opportunities to discuss academic issues.

Support Services: In delivering resources to students in the new degree, SPS will build on its current infrastructure, which supports four graduate degrees (one fully online and three in-class), two undergraduate degrees (fully online), and a portfolio of credit and non-credit certificate programs (both online and in-class). The student, faculty, and administrative services currently offered by SPS can readily be extended to this new bachelor’s degree program.
SPS currently has advisors who are trained to work with undergraduate and graduate students enrolled in the online programs, and all services, including the registrar, bursar, and financial aid offices—available online or in person—likewise have the capacity to handle the additional students.

Writing Support and Tutoring: Online writing and tutoring support in a wide array of subject areas is provided to SPS students by a consortium of diverse institutions. These services support undergraduate and graduate students alike. Students can choose to speak with tutors through live interactive Web conferences, on the telephone, via e-mail or text messaging. Students may ask questions about specific subject areas, or, if they need assistance writing papers, they may submit written drafts for a tutor to review up to three times. Tutors will not edit, correct, proofread, or rewrite papers. They will, however, coach students to consider the clarity of their work, point out inconsistencies in arguments, and identify problems with grammar. Likewise, if students need additional support in math or statistics, they are encouraged to work with a tutor. Should students need help with research projects, they can choose to work with the Research and Information Literacy tutors, all of whom are doctoral students at CUNY.

Career Services: The School of Professional Studies’ Career Services Office helps both current students and alumni seek full-time employment, consider a career change, or explore internship opportunities. Additionally, the School is implementing programs to address on-the-job issues, professional development, and career assessment needs. The Career Services Office incorporates a mix of the latest technology and digital communications to offer a host of online tools and workshops that meet the diverse needs of the SPS student and alumni community. In addition to traditional methods of placement counseling, the Optimal Resume online career management program is available; this program provides extensive support for resumes, cover letters, interview practice, portfolios, etc., and places career resources within reach of any students or alumni seeking career assistance.

Technology Support: The core educational technology infrastructure is CUNY’s enterprise Blackboard course management system. Blackboard supports the faculty’s requirements to share documents, have group discussions, assign collaborative projects, and respond to individual student questions and assignments. Other support services include online admissions and advisement, registration, and grade reporting, which are all also available in person. Web-based tools like LivePerson and GoToAssist, used by well-trained administrative staff, complement this support structure. Overall, these resources enable students and faculty to focus on teaching and learning activities while providing an extracurricular dimension of support and interaction.

The SPS Help Desk is available to help students and faculty with any technology issues that may arise from 8:00 A.M. until 9:00 P.M. weekdays, and all day on Saturdays. More than simply addressing problems as they arise, the Help Desk takes a proactive stance towards support by providing constituents with how-to guides and videos, live training, and regular updates about technology changes.
Accessing Services: Further information about student services is available through the School’s Web site, FAQs, Virtual Campus, and program brochure. In addition, anyone seeking information about programs and services at the School of Professional Studies can contact an inquiry specialist or an advisor at 212-652-CUNY (2869) or information@sps.cuny.edu.

Program Candidates
We anticipate that several types of students will be attracted to the program. In terms of academic background, most students will have majored in a computing field as undergraduates, most frequently computer science or computer information systems, but also computer engineering and information technology. The program may, however, also attract students who have a bachelor’s degree in a STEM-related field and significant coding and quantitative skills; for example, there are a large number of physics majors who have extensive math backgrounds and who have taught themselves to program with the help of one course in a high-level programming language.

The program will draw working professionals and recent graduates alike, both locally and from across the country. In the case of recent graduates, these students will be seeking advanced quantitative and analytic skills and, possibly further specialization in an industry area. These students may also be looking for a field in which to apply their skills in a more concrete and practical way.

In the case of working professionals, we expect this program to be attractive to several kinds of individuals. Some students may be graduates of a computing program who have been working in the technology field but are interested in switching industries. They may see this as a way to specialize in an industry area that has growth potential. Other students may be computing hobbyists who fell into a career in programming or information systems and would like to formalize their knowledge and credentials in this area as a way to advance. The program’s inclusion of business courses and concepts may be especially of interest to this group, who, having worked in the business world, can see benefits of further developing their business skills as a complement to their technical skills.

We expect to draw some students with an interest in issues of sustainability who are attracted to the urban sustainability track. Some of this interest may come from personal passion for environmental issues, while some may be pragmatic in nature; a recognition of the job growth potential of this field. As we develop new tracks, we will draw students with interest in those fields/issues.

Enrollment Projections
The online M.S. in Information Systems will admit an initial cohort of approximately 40 students in spring 2012. We anticipate that most students will be working and therefore attending school part-time, while a small number will register for a full-time course load. Furthermore, we assume a 67% 4-year graduation rate, which is consistent with University averages for master’s programs for classes entering from 2000-2004 (University Performance Management Process Reports, 2008-
The program is expected to grow to nearly 170 students by the end of the fifth year, as shown in Appendix IX.

The initial cohort size of 40 was estimated to be approximately three-quarters of the average enrollment in master’s level computer science and information systems programs at other CUNY campuses in 2009, as shown in the table below. While 40 students may be a sizable number of students for a first-time graduate program, we believe that because this program is being delivered online and because it contains the track in urban sustainability, the first of its kind in the United States, enrollment will be strong and we will be able to meet our enrollment goals.

<table>
<thead>
<tr>
<th>College</th>
<th>Major</th>
<th>Award</th>
<th>Fall 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baruch College</td>
<td>Business Computer</td>
<td>M.S.</td>
<td>42</td>
</tr>
<tr>
<td>Baruch College</td>
<td>Information Systems</td>
<td>M.B.A.</td>
<td>92</td>
</tr>
<tr>
<td>Brooklyn College</td>
<td>Computer Science</td>
<td>M.A.</td>
<td>59</td>
</tr>
<tr>
<td>Brooklyn College</td>
<td>Information Systems</td>
<td>M.S.</td>
<td>60</td>
</tr>
<tr>
<td>City College</td>
<td>Information Systems</td>
<td>M.S.</td>
<td>12</td>
</tr>
<tr>
<td>City College</td>
<td>Computer Science</td>
<td>M.S.</td>
<td>100</td>
</tr>
<tr>
<td>College of Staten</td>
<td>Computer Science</td>
<td>M.S.</td>
<td>26</td>
</tr>
<tr>
<td>Lehman College</td>
<td>Computer Science</td>
<td>M.S.</td>
<td>25</td>
</tr>
<tr>
<td>Queens College</td>
<td>Computer Science</td>
<td>M.A.</td>
<td>75</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td><strong>491</strong></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td><strong>55</strong></td>
</tr>
</tbody>
</table>

Across the nation, science and engineering programs suffer from low enrollments of African-Americans, Hispanics, and American Indians/Alaska Natives. While the period from 1996-2006 saw an increase from 9% to 11% of new students from groups traditionally underrepresented in graduate STEM majors, these figures do not parallel the collective representation of these groups in the U.S. population. Women’s participation grew roughly 5%, from 39% to 43%, during the last decade; yet, in the computer and information sciences, women represented only a quarter of graduate students in the field.\(^\text{18}\) Staff at the School of Professional Studies will work to exceed these national averages through recruitment efforts in relevant publications, Web sites, and feeder schools as well as by seeking financial support dedicated to these students.

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Marketing

*Competitive Analysis*

The chart on the next page identifies several variations of information systems programs at CUNY, others here in New York City, and still more available across the country through the online format. The curriculum at CUNY ranges from general IS programs to highly technical and specialized programs, targeted to both new graduates and working professionals. Unfortunately, none of the CUNY courses are available online. We see similar patterns at other schools as well. At several of the colleges listed, IS skills are combined with other disciplines as varied as medicine, business, and security. An important issue to point out is cost. Of all the institutions included in the analysis, CUNY offers the most affordable tuition. An in-demand major such as information systems and the opportunity to specialize in the emerging field of sustainability, combined with affordable tuition and online access, should make the proposed M.S. in Information Systems successful and self-supporting.
### Competitive Analysis

<table>
<thead>
<tr>
<th>Institution</th>
<th>Program Title</th>
<th>Tuition</th>
<th>Target Audience(s)</th>
<th>In person V. Online?</th>
<th>Units for Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baruch College/CUNY, Zicklin School of Business</td>
<td>M.S. in Information Systems M.S. in Quantitative Methods and Modeling</td>
<td>Resident: $325/ credit Non-resident: $605/credit</td>
<td>Recent graduates or working professionals with a business or information systems background.</td>
<td>In person</td>
<td>36 credits</td>
</tr>
<tr>
<td>Brooklyn College/CUNY, Department of Computer and Information Science</td>
<td>M.S. in Information Systems</td>
<td>Resident: $325/ credit Non-resident: $605/credit</td>
<td>Recent graduates or working professionals with a math and computer science background.</td>
<td>In person</td>
<td>36 credits</td>
</tr>
<tr>
<td>City College/CUNY, School of Engineering</td>
<td>M.S. in Information Systems with specializations in:</td>
<td>Resident: $325/ credit Non-resident: $605/credit</td>
<td>Working professionals with a background in engineering or science.</td>
<td>In person</td>
<td>30 credits</td>
</tr>
<tr>
<td>Stony Brook University/SUNY</td>
<td>M.S. in Information Systems Engineering</td>
<td>Approx. Resident: $697/credit Non-resident: $1148/credit</td>
<td>Recent graduates and working professionals with technical IT background.</td>
<td>In person</td>
<td>30 credits</td>
</tr>
<tr>
<td>Pace University</td>
<td>M.S. in Information Systems with specializations in:</td>
<td>$1160/credit</td>
<td>Students who are new to the field and other working IS professionals.</td>
<td>Online</td>
<td>36 credits</td>
</tr>
<tr>
<td>Stevens Institute of Technology</td>
<td>M.S. in Information Systems</td>
<td>$1160/credit</td>
<td>Information systems and business professionals</td>
<td>Online</td>
<td>36 credits</td>
</tr>
<tr>
<td>Drexel University Online</td>
<td>M.S. in Information Systems</td>
<td>$960/credit</td>
<td>IS designers and developers</td>
<td>Online</td>
<td>45 credits</td>
</tr>
<tr>
<td>Boston University Extended Education</td>
<td>M.S. in Computer Information Systems with concentrations in:</td>
<td>$700/credit</td>
<td>Working professionals</td>
<td>Online</td>
<td>30 credits</td>
</tr>
<tr>
<td>City College/CUNY, School of Engineering</td>
<td>M.S. in Urban Sustainability</td>
<td>Resident: $325/ credit Non-resident: $605/credit</td>
<td>B.S. in Engineering, Architecture, or Science</td>
<td>In person</td>
<td>30 credits</td>
</tr>
<tr>
<td>Arizona State University, School of Sustainability</td>
<td>M.A. or M.S. in Sustainability</td>
<td>Resident: $550/credit Non resident: $847/credit</td>
<td>For M.A., students with background in social science, planning, and related fields For M.S., students in natural sciences and engineering</td>
<td>In Person</td>
<td>33 credits</td>
</tr>
<tr>
<td>University of Maryland, University Campus</td>
<td>M.S. in Environmental Management</td>
<td>Resident: $445/credit Non-resident: $659/credit</td>
<td>Several years professional experience in the environmental field</td>
<td>Online</td>
<td>36 credits</td>
</tr>
</tbody>
</table>
**Target Audience**
As already discussed, we expect that most of the students who enroll in this program will arrive with an undergraduate computing degree, yet we do not rule out the small number of applicants who will have a bachelor’s degree in a STEM-related field and significant coding and quantitative skills. Also, the program will recruit working professionals and recent graduates alike.

**Proposed Outreach**
A broad-based recruitment plan will be developed by the academic director with support from the SPS marketing team. The campaign will target digital, relational, and print strategies, each of which will drive traffic to the program’s Web site. Further, we will aggressively pursue search engine optimization (SEO) strategies so that as people use search engines like Google and Yahoo (among others), the program’s Web site will appear high up on the search results list.

To drive interested students to the Web site, we will use a variety of other digital marketing channels including advertisements on websites for which users generally have high trust, e.g., Institute for Electrical and Electronic Engineers (IEEE has moved well beyond electrical engineering), Association for Information Systems (AIS), Association of Computing Machinery (ACM), and similar sites. There are many other relevant professional journals and scholarly search tools (e.g. Google Scholar) that offer advertising space—many of which display advertisements based on user search terms and user preferences so that the ad placements are targeted. This strategy should yield higher return on investment. The School’s Facebook, MySpace, Wikipedia, LinkedIn, and Twitter media sites offer alternative messaging platforms that will reach a broader untargeted audience.

An important part of any digital campaign is direct email with a viral marketing complement. The marketing group will contact professional organizations requesting access to mailing lists and listservs. SPS has a 250,000-person prospect database. While only a limited number of these individuals would be interested in or qualify for the program, using referral-based marketing techniques we will encourage recipients to “share this email with a friend.” Similarly, the Web site will have a “forward this page to a friend” function. These are proven low-cost peer-to-peer outreach techniques.

We will employ relationship marketing, contacting software industry professional organizations (New York Tech Council, NY Tech Meetup), open source computing organizations, non-profit groups (TechSoup, Idealist), clean tech associations (Cleantech Corridor) and employers through a combination of digital, print, and in person channels. In addition, we will market to existing CUNY students as well as the almost 14,000 individuals who graduated from the University in science, technology, engineering, and math between the years 2001 and 2010.

SPS will also market to employers and government agencies. To reach small local companies, we will work through professional networks including but not limited to the New York Technology Council, the Center for Economic and Environmental Partnership, Inc., and the Sustainability Practice Network.
Lastly, the digital and relationship strategies will be complemented with print ads and physical collateral. The following materials will be developed in order to inform prospective students and employers about the program:

- A tri-fold brochure outlining the program’s goals and objectives, courses, and admissions procedures;
- A postcard mailing;
- A flyer for mailing and in-person distribution;
- An ad campaign; and
- An application and registration packet.

VI. CURRICULUM

The proposed information systems degree consists of 36 credits. The curriculum draws on a number of disciplines, including computer science, math, statistics, environmental science, and business. The curriculum also attempts to be responsive to the needs identified in Section II, both as they relate to broader economic changes as well as job forecasts in the information technology sector.

Program Structure

All students will be required to take 24 credits in core courses and 12 credits in electives.

The core courses are foundational in nature. These lay out the basic concepts in mathematics, modeling, statistics, and programming techniques that are necessary for students to gain a broad understanding of data delivery, data storage and data use by organizations for creating new products or systems. The core also includes a course in project management, an especially relevant skill for students who may be working on managing complex technology projects, and two final courses in which students will actually plan and develop an information system.

Students will have the opportunity to pursue their own interests through electives and specializations. Students can specialize in an area of study by taking at least 9 credits (of the 12 elective credits required) within an area of specialization. The first specialization to be offered will be in urban sustainability, with other specializations added later, for example in health information and business intelligence. Students who chose not to specialize can take the 12 required elective credits from amongst the specialized electives or the general electives or a combination of the two.

The development of writing and oral communications skills will be integrated throughout the curriculum. Ethics will also be integrated across the curriculum, particularly in courses that apply core knowledge or use a case study approach, in which students will be asked to grapple with questions that seek to challenge a student’s understanding of ethics and ethical behavior.
Credit for Experience
At this time the program will not give credit for experience. Students who have significant background in a particular course area may request a waiver for that course requirement. If the waiver is granted, the student can substitute 3 credits of electives for the replaced course. Not more than 3 credits can be waived.

Course Descriptions

CORE COURSES (24 Credits)

IS 600 Information and Systems (3 credits)
*Note: This must be taken in the student’s first semester.*
*Pre-requisite: None*
Course description: Information systems today play an important role within an organization and that role will only grow in the future as data becomes an ever more critical driver of organizational goals. This course introduces students to concepts of information systems and the role of information systems within an organization. Topics covered will include organizational structure and behavior, types of information systems, hardware and software issues, data collection tools and techniques, issues of complexity, and the relevance of information systems to larger social issues like sustainability. The course will provide a review of relevant literature and some case study discussions.
*Rationale: The course introduces students to concepts and challenges of the purpose and importance of information systems has taken on in any organization, such as a city or a business, and to material that will be covered more in-depth in later courses.*

IS 601 Engineering Mathematics for Complex Systems (3 credits)
*Pre-requisite: None*
Course description: This course focuses on the mathematics used in helping to understand complex systems. The first part of the curriculum covers numerical analysis, including differential equations and some software packages and solutions. The second part examines mathematical modeling, especially linear and nonlinear programming, as well as the corresponding software packages. Contemporary real-world examples from business and society will be integrated.
*Rationale: Students need to be introduced to the types of mathematics that are critical to understanding the realm of complex dynamic systems modeling from diverse perspectives. This course addresses some of that need.*

IS 602 Advanced Programming Techniques (3 credits)
*Pre-requisite: None*
Course description: In this course students will learn aspects of contemporary programming that are important for data gathering and analysis, including real-time programming, GUI design, interactive database programming, service-oriented architecture, data collection with
and without databases, machine learning, data mining techniques, and GIS programming. Computer security issues will also be addressed, as will overall computer architecture. Students will be required to create a working system for a large volume of data using publically available data sets.

Rationale: This course introduces students to geospatial concepts and computer science techniques for working with large data sets, skills which have become more critical.

IS 603 Advanced Statistics and Probability Models (3 credits)
Pre-requisite: None
Course description: This course covers probability and statistics relevant to examining or modeling data related to complex systems, especially those involving time series. The probability portion of the course will cover probability models, including basic stochastic models. The statistical portion of the course will include hypothesis testing (distribution dependent and non-distribution dependent), estimation of parameters, and inference testing as used in the field. The use of a statistical package to present and analyze data will be an important course component.

Rationale: Statistical testing and the ability to follow literature based on using probability models are important skills in the field. This course addresses that need.

IS 604 Simulation and Presentation (3 credits)
Pre-requisite: IS 603
Course description: This course covers topics important to event-driven simulations and agent-based simulations, including generation of random numbers, random variates, experimental design for simulation experiments, gathering statistics, steady state versus transient state results, and the use of combined simulation and optimization. Simulation software will be included. Examples and problems drawn from contemporary business and society will be assigned.

Rationale: Many business and social problems have complex interactions. In this course, students will be able to write simulation programs, understand how long to run simulations to get accurate outcomes, and learn proper experimental design.

IS 610 Project Management Concepts (3 credits)
Pre-requisite: None
Course description: Students in this course learn to plan, organize, lead, and control software projects to ensure that they meet requirements and are delivered on time and within budget. Students learn the essentials of defining requirements, scheduling, budgeting, managing complex teams and distributed work, communications, conflict resolution, and staff development.

Rationale: Project management in an IT context is often underappreciated. In this course, students will gain the skills that will enable them to lead complex projects and adapt to a changing business environment.
IS 698 Information Systems Master’s Research Project I (3 credits)
Pre-requisites: IS 601, IS 602, IS 603,
Pre-requisite or co-requisite: IS 604
Course description: In this course, students will begin to integrate the knowledge and skills derived from the previous classes into a real-world project. Working in small teams (that may be geographically distributed) or by themselves, students will work on designing an information system. With the oversight of a faculty advisor, students will identify a topic, develop a research plan, conduct research, and collect data. The final deliverable of the course will be an implementation plan. The project may be organized in collaboration with a partner organization, for example, a local company, non-profit, or research lab. Students who opt to specialize will be expected to do their research in an area relevant to the specialization.
Rationale: This course is meant to be taken in the student’s second to last semester. It integrates the material from earlier courses and gives students an opportunity to apply their skills to create a system in which they will: do research; gather data; and write a research report.

IS 699 Information Systems Master’s Research Project II (3 credits)
Pre-requisite: IS 698
Course description: This course continues the work begun in the first Master’s Research Project course. In this course, students will actually implement the information system planned out in the previous course. The product of the course may involve various kinds of analytic tools, for example, a simulation, visualization, or a model. Students will also be required to submit a research report along with their technical product.
Rationale: This course is meant to be taken in the student’s last semester. It integrates the material from earlier courses and gives students an opportunity to apply their skills to create a system in which they will: do research; gather data; and write a research report.

ELECTIVES (12 Credits)

General Electives: Information Systems

IS 613 Managing Innovation and Strategy (3 credits)
Pre-requisite: None
Course description: This course has a dual focus. First, it prepares students to understand the nature of technical change in both information systems and technologies that are at the forefront of current practice. Second, the course explores current business models and product strategies that will drive market trends. Throughout the course students are responsible for analyzing how technical changes—many of which are specific to information systems—impact the populations affected by a new technology.
Rationale: An organization’s survival depends upon highly motivated entrepreneurs who are skilled in managing change from both a business and societal perspective. This course teaches students to manage technical change responsibly.

Current Topics Courses
There are a number of advanced electives that will provide the student with an opportunity to learn about current trends in the industry and the faculty to meet student needs/interests and market demand in a timely and flexible fashion. Because of the rapid rate of change in the industry, course offerings here will be frequently re-examined and updated as needed to ensure that students have access to the must up-to-date knowledge and practices in the field.

**IS 641 Current Topics in Database Systems (3 credits)**  
*Pre-requisite: IS 600; IS 602*  
This course will cover the most up-to-date trends in database systems in an in-depth manner. It will further the student’s basic understanding of how a database is organized allowing multiple users to access and update it. It will cover topics that support the IS component of any organization, especially database management systems (DBMS). Topics might include: DBMS systems, web-based approaches, data warehousing, business intelligence, very large databases, security issues, advanced data models, cooperative databases, data mining, user interfaces, web databases, query languages, expert systems, multimedia database systems.  
*Rationale: Current Topics courses provide the program the ability to keep its curriculum current as technology changes in this fast moving industry.*

**IS 642 Current Topics in Complex System Analysis (3 credits)**  
*Pre-requisite: IS 600, IS 601*  
Course description: This course allows the program to offer additional material in the area of complex systems after the student has gained a general background from pre-requisite courses. Topics might include: interactions, description languages, multiple user interactions and locking, organization complexity, performance issues, modeling, software. It will make use of actual real life examples of complex systems and examine methods for how to improve them making use of software programs.  
*Rationale: Current Topics courses provide the program the ability to keep its curriculum current as technology changes in this fast moving industry.*

**IS 643 Current Topics in Information Systems (3 credits)**  
*Pre-requisite: IS 600, IS 601, IS 602, IS 603*  
Course description: This course allows the program to offer additional material in the broad area of Information Systems after the student has gained a general background from the pre-requisites. This will be an advanced class. Emphasis will be placed on the software and hardware associated with the information systems.  
*Rationale: Current Topics courses provide the program the ability to keep its curriculum current as technology changes in this fast moving industry.*

**IS 661 Independent Study (1-3 credits)**  
*Pre-requisite: None*  
Course description: This course allows the program to offer additional material in the broad area of Information Systems after the student has gained a general background from the pre-requisites. This will be an advanced class. Topics might include: effects of internationalism on...
information systems (language considerations, distributed program creation techniques across time zones, etc.), cooperative information systems, security, threats, internet considerations, filtering, GUI design considerations. Emphasis will be placed on the software and hardware associated with the information systems.

**Rationale:** An independent study provides students with an opportunity to pursue their unique interests, either independently or in combination with the Current Topics courses.

**Specialized Electives: Urban Sustainability**

**IS 630 Urban Society and Sustainability (3 credits)**

*Pre-requisite: None*

Course description: The course introduces students to concepts and practices of sustainability in cities. Key objectives are to review and critique how sustainability planning is being carried out, to identify the barriers and bridges to its effective implementation, and to identify the technologies and metrics of success being used to create, catalog, and understand the progress made. A related objective is to analyze the urban systems being impacted by sustainability planning and practices, and how those systems have been modeled. Furthermore, students will reflect on and discuss the impact of sustainability projects on people’s lives. The course includes a review of relevant literature and extended case study discussions. Topics include: urbanization and resource utilization; society and cities; systems and the built environment; resources; environmental management; green businesses.

**Rationale:** This course will ground students in historical and contemporary perspectives of urban societies and systems and provide a context for thinking about potential technological solutions.

**IS 611 Overview of Current Technologies for Sustainability (3 credits)**

*Pre-requisite: None*

Course description: This research course uses a case study format to examine the underlying technologies that offer potential for improving urban sustainability and enabling well connected and intelligent cities. Areas of study may include sensors and actuators; transportation systems; building control systems; electric power control systems; renewable energy delivery systems; analytics and optimization for decision-making, sustainability policy, and complex systems of systems. Current papers discussing real-life examples from urban areas around the world will be used. This course ties in aspects of behavioral economics, psychology, sociology, social media, and urban design and explores the nature of human interaction with systems. Guest speakers from New York City government and industry will enrich the student experience.

**Rationale:** Before considering the design of new technologies, students need to learn lessons from successful and unsuccessful technology implementations. This course addresses that need.

**IS 612 Algorithmic, Modeling, and Simulation Solutions (3 credits)**

*Pre-requisites: IS 600, IS 601, IS 602, IS 603, IS 604*
Course description: This course discusses technical papers that use algorithmic and mathematical modeling solutions as well as simulations for improving urban sustainability. Topics include, among others, ad-hoc sensor networks and algorithmic solutions to building control systems. Software packages will be used to support the analyses.

Rationale: This course will provide students with an opportunity to apply the techniques learned in earlier courses, e.g., machine learning or control theory will be examined in the literature and applied here, giving the student additional practical skills and knowledge.

Current Topics Courses
There are a number of advanced electives that will provide the student with an opportunity to learn about current trends in the industry and the faculty to meet student needs/interests and market demand in a timely and flexible fashion.

IS 644 Current Topics in Urban Sustainability: Energy (3 credits)
Pre-requisite: None
Course description: This course will cover in detail the most up-to-date trends in energy distribution, consumption, monitoring, and conservation, including building control systems. Modeling and economic considerations will be a focal part of the course. Emphasis will be placed on software that is currently available for energy distribution, building usage, and conservation. Topics will vary, sometimes with a particular emphasis.

Rationale: Energy consumption and conservation play a major role in urban sustainability.

IS 645 Current Topics in Urban Sustainability: Transportation (3 credits)
Pre-requisite: None
Course description: The course will cover the most up-to-date trends in urban transportation systems, including both mass transit and surface transportation issues in an in-depth manner. Trends that rely on information systems, such as congestion pricing, peak demand parking, real-time transit information, and priority signaling, among others, will be considered. Emphasis will be placed on software and hardware implications.

Rationale: Transportation systems play a major role in urban sustainability and technology systems are increasingly being relied upon to reduce congestion and increase public transit usage.

IS 646 Current Topics in Urban Sustainability: Complex Systems (3 credits)
Pre-requisite: None
Course description: The course will cover the most up-to-date trends in urban systems and their interrelationships in an in-depth manner. Emphasis will be placed on software and hardware implications.

Rationale: Urban systems are interconnected.
VII. COST ASSESSMENT

Faculty
The faculty listed in Tables 2 and 3 (in appendices) have developed the curriculum under the leadership of Dr. Theodore Brown, Executive Officer of the doctoral program in computer science at CUNY’s Graduate School and University Center. Their enthusiasm and commitment to this emerging discipline will ensure the success of the program and its students.

Beginning in the first full year of operation, we will recruit a half-time academic director and two consortial faculty members consistent with the model currently in place at the School of Professional Studies. Table 4 in appendices identifies 10 additional adjunct positions for faculty who have not yet been identified. Adjunct instructors for the program will include University faculty and researchers, and will include subject matter experts available in New York City and beyond. All faculty teaching in the program will have doctoral degrees in their respective fields, or they will have an appropriate professional degree and related experience. All faculty who teach will be firmly committed to an effective online pedagogy and fully prepared to deliver online learning.

Definition of Full-time Faculty: SPS has a successful history of working with full-time faculty from the CUNY campuses in a consortial model comparable to the CUNY Graduate School. That model will continue to be followed in the context of this degree. Full-time faculty are, therefore, those faculty who are appointed full-time at another CUNY campus.

Facilities and Equipment
The online nature of the program eliminates the need for physical classrooms; however, SPS will provide space for faculty to meet with students as needed.

In terms of instructional technology, the Blackboard course management system and GoToMeeting (an online collaboration platform) together form the core of the teaching environment. Blackboard provides students and faculty with a resource repository and asynchronous workspace for document sharing, offline discussions, “coauthoring,” blogging, testing, scheduling, and grade management.

GoToMeeting (or an equivalent tool) offers students the chance to meet live online and to simultaneously share desktop applications. Importantly, live online meetings are an excellent chance for students to ask faculty their more complex questions that may require complicated answers, involve increasing levels of subtlety, and demand a real-time dialogue. Other activities made possible through live online meetings include simultaneously reviewing code, running simulations, and analyzing visualizations and reports. If necessary, faculty can even take control of a student’s desktop by commandeering the student’s keyboard and mouse, as if they were together in a computer lab. Lastly, the GoToMeeting platform facilitates student presentations.
and accommodates faculty who are interested in bringing in guest speakers from anywhere in the world.

Additional tools, services, and infrastructure particular to the technical nature of the program will also be necessary, for example, an online software development environment and statistical analysis software. Where possible, the School will use free or low-cost open source software, but it will also work to create partnerships with software providers to acquire free licenses for students and faculty. Other non-instructional resources are available for students, including academic advisement, registration, writing tutoring, and access to library resources. Students are provided with campus email accounts, personal advisors, and program orientation. Everything from admissions and financial aid to course registration and payment is available online.

The majority of these services are paid for as part of the School’s general operating budget. The only direct costs to this program are for specialized equipment and supplies.

**Library Resources**

Library support will be robust. The School of Professional Studies partners with Baruch College’s Newman Library—winner of the prestigious Excellence in Academic Libraries Award for best college library in 2003—to deliver the highest quality access to online and in-person services. Through this partnership, The William and Anita Newman Library provides SPS students and faculty with access to several hundred online databases and information resources in print and electronic formats. Users have access seven days a week to the library’s on-site computing facilities, as well as remote access from off-campus locations to thousands of full-text journals, newspapers, and books. A Web-based reference service, in which librarians answer questions via “text chat,” is available 24 hours a day, seven days a week. Beyond Newman Library, SPS students also have access to other libraries across the CUNY system.

The majority of library costs are paid for as part of the School’s general operating budget. However, there is an annual allocation for library materials that are specific to this program should additional subscriptions and academic/professional library resources be needed.

**Budget Tables**

Budget information is contained in the appendices as follows:

APPENDIX VI: Table 5: New Resources  
APPENDIX VII: Table 6: Projected Revenue  
APPENDIX VIII: Table 7: Five-Year Financial Projections Worksheet  
APPENDIX IX: Table 8: Five-Year Revenue Projections Worksheet
VIII. EVALUATION

Governance and Oversight
Development and oversight for the online Master of Science degree in Information Systems will follow the governance plan of SPS. A Program Development Committee of full-time CUNY faculty members, recommended by the Dean, will develop the appropriate coursework, syllabi, and supporting documentation. The proposal will then be reviewed by an independent CUNY faculty group and the SPS curriculum committee. The Dean of the School of Professional Studies, the Associate Deans, and the Academic Director for the program will be responsible for oversight and management.

Evaluation and Program Quality
The Master of Science degree in Information Systems will be implemented according to New York State Education Department’s Principles and Standards of Good Practice for Distance Education. The program will also follow best practices in online education identified by the Middle States Commission on Higher Education and the Western Cooperative for Educational Telecommunications. SPS will measure student academic progress and persistence through graduation. The program will use a combination of formative and summative assessment to track student learning and professional performance at the course, program, and career levels.

Faculty will provide students with written early warning reports before mid-term, spelling out those areas where students can improve their performance. Formative progress reports are specific and detailed and cover academic and professional competencies. All courses use a combination of evaluative devices, and to the extent feasible, courses will include a final project, presentation, and writing assignment. Performance can also be assessed by evaluating progress against professional project plans, which will be created as a part of each course. Lastly, a two-semester master’s project course will be used as a summative assessment of each student’s overall knowledge and ability prior to graduation.

To ensure both course and programmatic goals are met, the program’s academic director and consortial faculty will meet to discuss each student’s progress and overall program accomplishments.

External Reviews
Please see Appendix XI for external evaluations from:
- Dr. Chris Bregler, Associate Professor, New York University, Courant Institute of Mathematical Sciences
- Dr. Edwin van Leeuwen, Director of Geothermal Systems, Melbourne Energy Institute, University of Melbourne
- Dr. Boleslaw K. Szymanski, Professor, Claire and Roland Schmitt Distinguished Professor of Computer Science, Rensselaer Polytechnic Institute
IX. APPENDICES

APPENDIX I - COURSE SYLLABI
APPENDIX II – TABLE 1b: GRADUATE PROGRAMS SCHEDULE
APPENDIX III – TABLE 2: FULL TIME FACULTY
APPENDIX IV – TABLE 3: PART-TIME FACULTY
APPENDIX V – TABLE 4: FACULTY TO BE HIRED
APPENDIX VI – TABLE 5: NEW RESOURCES
APPENDIX VII – TABLE 6: PROJECTED REVENUE
APPENDIX VIII – TABLE 7: FIVE-YEAR FINANCIAL PROJECTIONS FOR PROGRAM WORKSHEET
APPENDIX IX – TABLE 8: FIVE-YEAR REVENUE PROJECTIONS FOR PROGRAM WORKSHEET
APPENDIX X – SED APPLICATION FOR DISTANCE EDUCATION FORMAT
APPENDIX XI – EXTERNAL EVALUATION REPORTS
APPENDIX XII – LETTERS OF SUPPORT
APPENDIX XIII – FACULTY CVs
APPENDIX XIV – EVIDENCE OF JOBS
APPENDIX I - COURSE SYLLABI
CORE COURSES
The City University of New York  
The School of Professional Studies  
At the Graduate School and University Center  

Master of Science in Information Systems  

IS 600  
INFORMATION AND SYSTEMS (3 credits/45 hours)  

Pre-requisites: None  

Note: This must be taken in the student’s first semester.  

Course Description  

Information systems today play an important role within an organization and that role will only grow in the future as data becomes an ever more critical driver of organizational goals. This course introduces students to concepts of information systems and the role of information systems within an organization. Topics covered will include organizational structure and behavior, types of information systems, hardware and software issues, data collection tools and techniques, issues of complexity, and the relevance of information systems to larger social issues like sustainability. The course will provide a review of relevant literature and some case study discussions.  

Learning Objectives  

- understand the workings of, interconnections between, and challenges facing complex information systems and the organizations they sit within  
- understand the workings of companies, their motivations, and the important role of information technology  
- apply the concept of sustainability to critically examine issues related to an organization’s success  

Textbooks  

IT’s hidden face: Everything you always wanted to know about Information Technology: A look behind the scenes C. Roeltgen, paperback, 2009, CreateSpace.  
Other reading material as warranted  

Assessment and Grading  
30% Participation  

Proposal to Establish a Master of Science in Information Systems  
CUNY School of Professional Studies  
Approved by the School of Professional Studies Curriculum Committee, July 15, 2010  
Approved by the School of Professional Studies Governing Council, September 10, 2010
30% Reflection papers/projects
30% Midterm exam
10% Final presentation and critique

Weekly Schedule
1 – Introduction to the program
2 – Review of statistics, probability, discrete mathematical techniques
3 – Technical side of Information systems--hardware
4-5 – Technical side of Information systems--software
6 – Data collection hardware and software
7 – Information systems, management information systems
8 – Software and hardware interactions, multimedia systems, internet issues, security
9 – Introduction to issues in human-computer interface
10 – Place of Information technology within an organization, impact
11 – Organization of a company, organization of a city, roles of participants, entrepreneurship, legal issues
12 – Sustainability issues
13-14 – Complexity and how to deal with it, case studies
15 – Final

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See 
The City University of New York
The School of Professional Studies
At the Graduate School and University Center

Master of Science in Information Systems

IS 601
ENGINEERING MATHEMATICS FOR SYSTEMS (3 credits/45 hours)

Pre-requisites: None

Course Description
This course focuses on the mathematics used in understanding complex systems. The first part of the curriculum covers numerical analysis, including differential equations and some software packages and solutions. The second part examines mathematical modeling of systems, especially linear and nonlinear programming as well as the corresponding software packages. Contemporary examples from business and society will be integrated. Appropriate software packages will be used to illustrate. Students will become proficient in these packages.

This course focuses on numerical methods by which mathematical problems are formulated so they can be solved with arithmetic operations. During this course, we will study the solutions of linear systems of equations, least square problems, eigenvalue problems, and optimization problems. We will also learn numerical methods for solving ordinary differential equations. Students should come to appreciate many state-of-the-art techniques and recognize when to consider applying them. We will also learn basic principles applicable to a variety of numerical problems and how to apply them. Case studies will also be presented. In the last third of the course, we introduce modeling of dynamic systems using probability, and stochastic models.

Learning Objectives:
After completing this course, students will be able to:

- Rigorously formulate mathematical models.
- Apply techniques to solve mathematical problems.
- Apply optimization techniques for such systems.
- Analyze the models and solutions to make decisions to improve the performance of the systems.

Texts/Materials
MATLAB Software or Mathematica

Grading: Homework Assignments – 50%; Exams and Quizzes – 50%
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<thead>
<tr>
<th>LECTURE #</th>
<th>TOPICS</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to Mathematical Modeling, Engineering Problem Solving within the Context of Complex Systems</td>
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<tr>
<td>2 and 3</td>
<td>Searching for Roots of Equations (Bisection, Graphical, False Position, Newton-Raphson, Incremental Searches, etc.)</td>
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<td>4</td>
<td>Linear Algebraic Equations (Gauss Elimination, Gauss-Jordan, Gauss-Seidel)</td>
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<tr>
<td>5</td>
<td>Optimization – One Dimensional Unconstrained Optimization</td>
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<td>6</td>
<td>Optimization – Constrained Optimization</td>
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<tr>
<td>7</td>
<td>Curve Fitting – Least Squares Regression</td>
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<tr>
<td>8</td>
<td>Curve Fitting – Interpolation</td>
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<tr>
<td>9</td>
<td>Ordinary Differential Equations – One Step Methods</td>
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<tr>
<td>10</td>
<td>Ordinary Differential Equations – Multistep Methods</td>
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<td>11</td>
<td>Eigenvalue Problems</td>
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<td>12</td>
<td>Dynamic Models</td>
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<td>13</td>
<td>Analysis of Dynamic Models</td>
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<td>14</td>
<td>Probability Models</td>
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<td>15</td>
<td>Final</td>
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**Academic Integrity and Administrative Policies**

This course adheres to the School of Professional Studies’ academic policies. See [http://www.sps.cuny.edu/acad_policies/index.html](http://www.sps.cuny.edu/acad_policies/index.html).
The City University of New York  
The School of Professional Studies  
At the Graduate School and University Center  

Master of Science in Information Systems

**IS 602**  
**ADVANCED PROGRAMMING TECHNIQUES** (3 credits/45 hours)

*Pre-requisites: None*

**Course Description**
In this course, students will learn real-time programming, GUI design, interactive database programming, service-oriented architecture, data collection with and without databases, machine learning, data mining techniques, and GIS programming. Computer security issues will also be addressed. Students will be required to create a working system for a large volume of data using publicly available data sets.

This course introduces students to spatial concepts and computer science techniques for working with large data sets, skills which will become more critical as the use of sensors and other smart devices proliferate.

**Learning Objectives**
Students will be able to:
- create a web-based interface to collect data into a database
- interact with the system to change parameters

**Bibliography**
Jiawei Han and Micheline Kamber. *Data Mining: Concepts and Techniques*, Morgan Kaufmann (2001).

**Schedule**
**Week 1**: Introduction to and dissection of a model system: a web page, a java applet, an ajax call, a Java server page, a java server, and a simple mysql table. Overview of the technologies and their alternatives.
**Week 2**: Introducing java: the core language and the use of class libraries and hierarchies. Simple class definitions and basic object oriented concepts. Java's support for input/output, threads, exceptions and network programming.
Week 3: Client-side java programming. Implementing graphical user interfaces in java. Drawing simple graphics.

Week 4: Web page architecture: HTML, CSS and javascript.

Week 5: DHTML techniques, AJAX, and jQuery.


Week 7: Database management and programming using MySQL. Interfacing with MySQL using the command-line and JDBC.

Week 8: Data-mining techniques and approaches.

Week 9: Introduction to GIS. Survey of existing GIS projects. Local publicly available data (for New York City and State). Introduction to programming using GIS-related APIs and programming tools, client and server side.

Week 10: Security issues: authentication, communication, database, session, encryption.

Week 11: Human-computer interface design

Week 12: Developing for social media and mobile technologies

Weeks 13-14: Project Development and Completion.

Grading
30% Midterm
10% Class Participation
30 % Project
30% Final

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.
Pre-requisites: None

Course Description
This course covers probability and statistics relevant to examining or modeling data related to business and social issues. The probability portion of the course will cover probability models, including basic stochastic models. The statistical portion of the course will include hypothesis testing (distribution dependent and non-distribution dependent), estimation of parameters, and inference testing as used in the field. The use of a statistical package to present and analyze data will be an important course component.

Learning Objectives
Upon completion of this course, students will be able to:
• apply the fundamental methods for describing complex data;
• design statistical experiments for descriptive or forecasting purposes;
• use probability models to describe real problems; and

Recommended Textbooks

Lectures
The course consists of an equivalent of 15 three-hour lectures with assigned reading. A full set of Lecture Notes will be provided online with exercise suggestions.

Weekly Schedule
Week 1: Concepts of probability: random variables, probability distributions, expectations.
Week 2: Concepts of probability: conditional probability, conditional expectations.
Week 4: Descriptive statistics: estimation and confidence intervals.
Week 5: Programming examples using case studies and real data.
Week 6: Statistical inference: experimental design.
Week 7: Statistical inference: hypothesis testing.
Week 8: Statistical inference: Goodness of fit and analysis of categorical data, nonparametric tests.
Week 9: Midterm
Week 10: Programming examples using case studies.
Week 12: Probability models: analysis of absorbing Markov chains, examples.
Week 14: Probability models: The exponential distribution and the Poisson process,
Week 15: Final

Grading
30% Midterm
20 % Quizzes
20% Class Participation
30% Final

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.
The City University of New York
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Master of Science in Information Systems

IS 604
SIMULATION AND PRESENTATION (3 CREDITS/45 HOURS)

Pre-requisites: IS 603

Course Description
This course covers topics important to event-driven simulations and agent-based simulations, including generation of random numbers, random variates, experimental design for simulation experiments, gathering statistics, steady state versus transient state results, and the use of combined simulation and optimization. Simulation software will be included. Examples and problems drawn from business and society will be assigned.

Learning Objectives
- create a simulation model for a complex system
- show the limitations of the simulation model

Recommended References

Lectures
The course consists of an equivalent of 15 three-hour lectures with assigned reading and a final. There will be student presentations of research projects.

Weekly Schedule
Week 1: Introduction: what is Monte Carlo simulation, and why is it necessary. Case study.
Week 3: Simulation Models: Practical class learning to use the simulation package SSJ.
Week 4: Programming examples using case studies.
Week 5: Output Analysis: coverage and confidence intervals. Finite Horizon problems.
Week 6: Output Analysis: infinite horizon models.
Week 7: Programming examples using case studies and midterm.
Week 8: Efficiency improvement, basic concepts.
Week 9: Variance reduction techniques: common and antithetic random variables, control variables.
Week 10: Variance reduction techniques: importance sampling, conditional Monte Carlo.
indirect estimation.

**Week 11**: Programming examples using case studies.

**Week 12**: Generation of distributions: inverse function method, acceptance/rejection, and transformations.

**Week 13**: Introduction to discrete optimization: simulated annealing and random search methods

**Week 14**: Introduction to continuous optimization: response surface methodology, gradient-based methods, SPSA.

**Week 15**: Final

**Grading**
- 20% Class Participation
- 30% Projects and Papers
- 20% Midterm
- 30% Final

**Academic Integrity and Administrative Policies**

This course adheres to the School of Professional Studies’ academic policies. See [http://www.sps.cuny.edu/acad_policies/index.html](http://www.sps.cuny.edu/acad_policies/index.html).
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Master of Science in Information Systems

IS 610

PROJECT MANAGEMENT FOR INFORMATION SYSTEMS (3 CREDITS/45 HOURS)

Pre-requisites: None

Course Description
Students in this course will learn to develop, organize, lead and control information systems projects to ensure that they meet requirements and are delivered on time and within budget. Students will learn the essentials of defining requirements, scheduling, budgeting, managing complex teams and distributed work, communications, conflict resolution, and staff development. In addition, students will be exposed to the basics of operations of professional and service driven companies.

Learning Objectives
- The course will address the following objectives:
- The application of project management concepts to the challenges associated with software development projects and programs
- The development and documentation of a technology project
- The management of interdisciplinary teams, distributed work flows and human dynamics to position the project for success
- The use of software tools to assist in the development, execution, monitoring and control of the project.
- The skills, attributes and management skills associated with successful project managers

Students will be required to:
- Work in a team-based environment to manage a project from initiation to closing
- Develop a comprehensive project plan covering all phases of the development of an application or a system
- Present project progress reports and communicate effectively with the project team and senior management
- Use project management software tools to monitor and control the project
- Analyze and discuss illustrative case studies and the associated lessons-learned from the success and failure reported in these cases.

Requirements for the Project and Paper:
Students will be required to build a project notebook throughout this course. It will consist of all of the deliverables from each class workshop. This will be submitted as a team effort. The presentation of the project will be a real-life application of the communication principles and practices learned through the course. The teams will identify their projects' objectives, how they used project management

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Approved by the School of Professional Studies Governing Council, September 10, 2010
techniques to manage the project, and demonstrate the results of applying these principles and next steps for the project.

The paper will be a written analysis consisting of the following sections:

- Introduction – a brief overview of the project and the business reason it was selected.
- Description of the project – This section should be a much more detailed description of the project including a scope statement and budget details. Describe the objectives of the project. Provide an overview of the team and the timeline they were given as well as major milestones.
- Discuss the problems that the team faced during the project lifecycle and how they were handled. This should be as detailed as possible.
- Analysis of the project components.
- Critical Path – discuss the techniques you used to manage the project to this critical path. Did you manage successfully? Why or why not?
- Business requirements - discuss how you gathered requirements and whether or not that process can be improved upon in the future.
- Risk - explain the success, or lack of, your risk management plan.
- Conclusion: Describe how you would apply the “lessons learned” from this project to your next project so that you would manage the similar issues effectively.

Course Grading and Requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Quizzes and Class participation</td>
<td>25%</td>
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<tr>
<td>Project &amp; Paper</td>
<td>25%</td>
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<tr>
<td>Midterm Exam</td>
<td>25%</td>
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<tr>
<td>Final Exam</td>
<td>25%</td>
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Required Text

Information Technology Project Management (with Microsoft Project 2007 CD-ROM), 6th Edition
Kathy Schwalbe
Textbook ISBN-10: 0-324-78692-1

Optional Reference Text

A guide to the project management body of knowledge (PMBOK® Guide), 4th Edition
Project Management Institute, Inc., c2008.
ISBN: 1933890517

Course Outline

Week 1  Overview of the Course and Intro
- Key definitions and foundational elements
- Project lifecycle components
- Executive Sponsorship

Week 2  Selecting the Project
- Qualitative and Quantitative methods
• Project Requirements
  - Develop the high-level project plan
  - Create the scope document for clients
  - Document the project objectives

Using Microsoft Project
• Basic Functionality
• Setting up project information
• Creating an activity list
• Defining activity relationships
Assigning resources to each activity

Reading assignment:
Schwalbe, Ch. 1 and 2


Week 3 Initiating the Project
• Clarify the project requirements
  - Develop the project deliverables
  - Identify stakeholder requirements and stakeholder needs and wants
  - Verify requirements
  - Prioritize requirements
  - Clarify requirements
• Plan the project guidelines based on constraints
• Using communications to develop commitment

Reading assignment:
Schwalbe, Ch 4

Class time workshop:
- Identify project deliverables
- Develop project guidelines and terms of engagement

Quiz # 1

Week 4 Project Planning
• Business requirements
• Scope

Reading assignment:
1. Schwalbe, Ch 5
Class time workshop: Gather and document your project requirements

**Week 5  Work Break Down Structure**
Detail the Work Breakdown Structure (WBS)
- Create Work Breakdown Structure Major Activities
- Detail All Tasks
- Add Task Information
- Identify Task Responsibility
- Develop Task Specifications
- Document Task Information Database

Reading assignment:
Schwalbe Ch 6

Class time workshop: Develop WBS

**Week 6  Estimating Techniques for time and cost**
- Three Point
- PERT
- Analogous
- Parametric
- Bottom Up
- Limitations of Estimating Techniques
- Order of Magnitude

Reading assignment:

Class time workshop:
Develop project “high-level estimates.”

**Week 7  Network Diagram**
- Task dependencies
- Sequential diagram
- Critical Path
- Milestones

Reading assignment:

Class time workshop: Develop Project Network Diagram
Week 8  Resources and Cost

- Earned Value Management
- Cost Planning
  - Estimation Techniques applied
  - Components of Cost
  - Resource Planning
- Managing the budget – monitor and control

Reading assignment:
1. Schwalbe, Ch 7

Class time workshop:
Apply project budget to tasks and required resources

Week 9  Quality

- Quality Management Planning
- Quality theory and gurus
  - Deming
  - Juran
  - Ishikawa
  - Crosby
- Quality Control Tools
  - Cause and effect diagrams
  - Control Charts and the Rule of Seven
  - Pareto Diagrams
- Procurement Planning
  - Buy or Build decisions
  - Contract types
  - Selecting contractor
  - Inventory management

Reading assignment:
1. Schwalbe, Ch 8
2. “China: Calling All Project Managers” Business Week, April 18, 2007 on line at:
http://www.businessweek.com/globalbiz/content/apr2007/gb20070418_435349.htm?chan=search

Class time workshop:
Develop Quality Management Plan

Week 10  Risk

- Risk Management Planning
  - Defining risk events in PM; business vs. pure risks
- Identify and Assess all Risks
- Define Preventative Action and Contingencies
- Develop the Risk Response Plan
- Procurement Planning

- Uncertainty Management
  - Simulations
  - Sensitivity Analysis
  - Taking corrective action to improve the project’s position

Reading assignment:
Schwalbe, Ch 11

Class time workshop:
  - Identify Risks and Complete Risk Analysis
  - Develop Risk Response Plan

**Week 11 Baselines, Performance and Variance**

- Executing and monitoring the project
- Baselines and change management methods
- Managing variances
- Managing the financial aspects and budget
- Change management planning
- Manage communications
  - Communications challenges
  - Types of styles and blockers
  - Virtual teams and communications

Reading Assignment:

Class time workshop:
  - Performance Reporting
  - Communicating the reports

**Week 12 Leadership**

- Managing a project vs leading a team
- Team dynamics
- Hidden communications

Reading assignment:
Schwalbe, Ch 9
Assignments: Work with your team to finalize your presentation

**Week 13**  
Team presentations  
Project notebooks and reports are due

**Week 14**  
Team presentations

**Week 15**  
Final Exam

**Academic Integrity and Administrative Policies:**  
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IS 698
INFORMATION SYSTEMS MASTER’S RESEARCH PROJECT I (3 CREDITS/45 HOURS)

Pre-requisites: IS 600, IS 601, IS 602, IS 603; Pre-requisite or co-requisite: IS 604

Course Description
In this course, the first course in a two-part sequence, students will begin to integrate holistically the knowledge and skills developed in the previous classes into a real-world research project. Working in small teams (that may be geographically distributed), students will work toward designing an information system. This class will primarily consist of the preliminary research and planning toward that end. Students will identify a research topic, develop a research plan, collect data (in some but not all cases), and develop a proposal for an information system to address the research problem. The final deliverable of the course will be the proposal.

The project can be organized in collaboration with a partner organization, for example, a local company or non-profit, or a research lab. Prior to the course starting, potential partners will be lined up so that students have various projects to choose from. Students will also be allowed to identify a partner and scope out a possible project in advance. Each project team will have a faculty adviser.

The course will follow a standard schedule, regardless of the research topic. At several points in the semester, students will meet with their faculty advisors to update them on progress and receive feedback. All projects, at the end of the second course in sequence, will result in the same two products: 1) an information system; and 2) a technical paper outlining their research and explaining their system. The system can take various forms, for example a web-based decision support tool or a game or a mobile app. All projects must contextualize the research issue within a broader political, social, and policy environment.

This course will be taken in the student’s second to last semester.

Learning Objectives
At the conclusion of this course, students should be able to:
• Define a research problem
• Evaluate secondary data
• Choose an appropriate research design
• Identify a data collection method
• Survey the potential analytic tools to be used on the data
• Plan the design of the information system

**Weekly Schedule**

**Weeks 1-2:** One or two large problem areas will be discussed in some depth to complement the first course. This time students will examine a problem with an eye to working out what data to collect and process to test a hypothesis or to help find a solution, e.g. a way for a person to monitor her electricity usage via a dashboard.

**Week 3:** The Research Process; Theory and methods; Basic research strategies: Lit search; Ethics in research. Conducting Secondary Research: Overview of relevant journals and secondary data sources and potential project topics.

**Week 4:** Selecting a Research Project: Constitute a team; Assign responsibilities

**Week 5:** Assessing Analytic Tools

**Week 6:** Exploring Information Systems

**Week 7:** Planning the Back End and Front End System

**Weeks 8-10:** Develop a full methodology to create a solution and technology. Each week the team must report to the rest of the class.

**Week 11:** Critical review of solution

**Weeks 12-14:** Work on details and revise

**Week 15:** Finalizing the Proposal: Report to class

**Textbooks, Readings, and Materials**

Specific to the particular projects.

**Assessment and Grading**

Each student will be graded on their participation in the course.

40% writing on wiki

30% presentations and critiques

30 % final report

**Academic Integrity and Administrative Policies**

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Master of Science in Information Systems

IS 699  
INFORMATION SYSTEMS MASTER’S RESEARCH PROJECT II (3 credits/45 hours)

Pre-requisites: IS 698

Course Description  
In this course, students will take all the planning done in the previous course and actually implement their project. This includes working with data sets, full interface, back end and front end applications software, and modeling that needs to be done.

Learning Objectives  
At the conclusion of this course, students should be able to:
- Analyze data using sophisticated analytic methods
- Develop information system tailored to data types and user needs
- Present data, research findings, and recommendations in clear and actionable manner

Textbooks, Readings, and Materials
Specific to the particular projects.

Assessment and Grading
Each student will be expected to give at least two presentations during the class on papers and other material and write critiques of other presentations.

30% Report on Interim Milestones
30% Interim Presentations
40% Final Report and Presentation

Weekly Schedule
Students will come into the class with a schedule and workplan in place for completing their project over the course of the semester. The workplan will include milestones relevant to each project. Students, under the supervision of their faculty advisor, will work under the schedule they have set. Periodically they will meet with their advisors to review progress.

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.
General Electives: Information Systems
Pre-requisites: None

Course Description
This course has a dual focus. First, it prepares students to understand the nature of technical change in both information systems and technologies that are at the forefront modern systems. Second, the course explores current business models and product strategies that will drive technology trends. Throughout the course students are responsible for analyzing how technical changes—many of which are specific to information systems—impact the populations affected by a new technology.

Learning Objectives
In this course students will be able to:
• understand the sources and types of technology and service innovations
• identify the bidirectional connections between the business environment, company strategies, and technical change
• analyze and forecast changes in technical solutions that underlie sustainable business models
• develop high-level strategic responses to changes in the business environment

Required Materials

Scholarly and professional articles are available free online through the library or Google Scholar.

Grading
1. Case 1 – 35%
2. Case 2 – 35%
3. Participation – 5%
4. Group Project – 25%; In evaluating the group project, I consider the quality of your ideas, argument, supporting evidence, presentation, and teamwork, however, the grade is issued as a whole.
Discussion and Writing Assignments
I will guide you through each module but let you learn-by-doing. I will also help to shape and shift the class discussions. However, discussions are intended to let you actively engage in the course and stretch your thinking. It wouldn’t be helpful if I do all the talking. Writing and the way you present your ideas matter in this course. Clear and coherent papers are a minimum professional expectation. Late assignments will not be accepted without prior agreement. If you expect there will be an issue with turning your work in on time, speak to me before hand.

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.

Contact Information: Seven days, anytime before 11 PM; paul.russo@mail.cuny.edu or 917-293-3911. I will get back to you within 24-hours and you should do the same with me.

Course Schedule

Module 1 (Online Meeting) – Innovation, Business Strategy and Value Creation
- Basics of innovation and technical change, and how businesses lead or follow
- Value creation
- Business models
- Economic impacts of innovation
- Organizational knowledge, capabilities, routines, and processes
Readings:
- M&S Chs 1, 2
- Creative Destruction (Cox 2008)
- Why Sustainability is Now the Key Driver of Innovation (Nidumolu, Prahalad, and Rangaswami 2009)
- Beyond Greening: Strategies for a Sustainable World (Hart 1997)
- Creating Value in an Economic Crisis (Clinton 2009)

Module 2 (Online Meeting) – Strategy and Measuring Business Performance
- Understanding performance
- Performance metrics
Readings:
- M&S Chs 3, 5, 6
- What is Strategy? (Porter 1996)
- Sustainable Innovation through an Entrepreneurship Lens (Larson 2000)
- Indicators for Sustainable Communities: A Strategy Building on Complexity Theory and Distributed Intelligence (Innes and Booher 2000)
From Experience: The invisible Success Factors in Product Innovation (Cooper 1999)
Assignment: Offline discussion

Module 3 (Offline) – Types, Models, and Sources of Innovation
- Survey of innovation literature
- Radical and disruptive innovation
- Sources of innovation
Readings:
- Radical Innovation (Utterback 1993)
- Can Disruptive Innovation Cure Healthcare (Christensen, Bohmer, and Kenagy 2000)
- The discipline of innovation (Drucker 1985)
- Supplemental - The 12 different ways that companies innovate (Sawhney, Wolcott, and Arroniz, 2006)
Assignment: Offline discussion

Module 4 (Offline) – Architectural Innovations and Diffusion of Innovation
- Innovation cycles
- Diffusion
- Architectural innovations
- External drivers
Readings:
- Kuhn Summary (1962)
- Diffusion of Innovations (Rogers 1995) – pages 1-37
- Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms (Henderson and Clark 1985)
- Clio and the Economics of QWERTY (David 1985)
Assignment: Offline Discussion

Module 5 (Offline) – Role of IT in Innovation
- Identify the role of information technology in innovation
- Connection between strategy and information
Readings:
- Mastering the Three Worlds of Information Technology (McAfee 2006)
- Strategy and the New Economics of Information (Evans and Wurster 1997)
- The New Industrial Engineering: IT and Business Process Redesign (Davenport and Short 1990)
The CitiStat Model: How Data-Driven Government Can Increase Efficiency and Effectiveness (Perez and Rushing 2007)
Governing by the Numbers: The Promise of Data-Driven Policymaking in the Information Age (Esty and Rushing 2007)
- Optional Case - Rattling SABRE – New Ways to Compete on Information (Hopper 2001)
Assignment: Offline discussion

Module 6 (Online) – Case Study 1
• Identify the role of supply chain management in creating value and improving performance
Readings:
  • A Supply Chain in Real-time
Assignment: 3-page paper describing evolutions in Info Systems from spreadsheets to enterprise resources portals. Students may draw on published documents from industry and organizations, but must also incorporate at least 5 scholarly or trade journal references. Students are advised to draw on materials covered in the Urban Society and Sustainability course where appropriate.

Module 7 (Offline) – Role of Knowledge and Information in Innovating
• What is knowledge
• Knowledge as a strategic resource
• Individual v. organizational knowledge
Readings:
  • Knowledge Based View of the Firm (Grant 1996)
  • Absorptive Capacity (Cohen and Levinthal 1990)
  • Communities of Practice (Wenger and Snyder 2000)
Assignment: Offline discussion

Module 8 (Offline) – Competencies and Capabilities
• Relationship between competencies and strategies in products
• Competencies in services
• Core rigidities
Readings:
  • Core Competence of the Firm (Prahalad and Hamel 1990)
  • Core Capabilities and Core Rigidities (Leonard-Barton 1997)
  • Why the Battle of Trafalgar Was Won Before it was Fought (Pringle and Knoll 1997)
  • Dynamic Capabilities and Strategic Management (Teece, Pisano, and Shuen 1997)
Assignment: Offline discussion

Module 9 (Offline) – Service Innovation
• Definition of services
• Growth in services
• Knowledge Based Information Services (KIBS)
• Innovation issues in services
Readings:
  • Knowledge Intensive Business Services (Snow, Kastrinos, Flanagan, Bilderbeek, den Hertog, Huntink, and Bouman 1995)
  • Services Innovation: Coming Of Age in the Knowledge-Based Economy (Miles 2000)
Assignment: Offline discussion

Module 10 (Online Meeting) – Case Study 2
• Identifying the innovations in particular sustainability problems
• Identifying the role of information systems in driving those innovations
• Integrating how topics previously covered in the course play out in these real-life examples

Readings:
• IBM Smarter Healthcare or alternative

Assignment: Online discussion of the case study and a 3-page position paper on the role of information systems in driving innovation in one sustainability niche. Students may draw on published documents from IBM and service providers, but must also incorporate at least 5 scholarly or trade journal references. Students are advised to draw on materials covered in the Urban Society and Sustainability course where appropriate.

Module 11 (Offline) – Emerging Markets and Global Innovation Networks
• Open innovation
• Clusters
• Outsourcing
• Talent circulation

Readings:
• Clusters and the New Economics of Competition (Porter 1990)
• Transnational Communities and the Evolution of Global Production Networks (Saxanian 2002)
• Open Innovation and Strategy (Chesbrough and Appleyard 2007)
• Strategic Outsourcing (Quinn and Hilmer 1994)
• Why do firms do basic research with their own money? (Rosenberg 1990)

Assignment: Offline discussion

Module 12 (Online Meeting) – Organizing for Innovation and Managing Creativity
• Aligning strategy and structures
• Overview of management
• Performance and incentives

Readings:
• M&S Chs 4, 9
• How Pixar Fosters Creativity (Catmull 2008)
• Managing for Creativity (Florida and Goodnight 2005)

Assignment: Offline discussion

Module 13 (Offline) – Making Innovation Happen
• Project implementation
• New product development
• Evolutionary perspectives

Readings:
• M&S Chs 7, 8
• Getting it done (Roberts 2000)
• Supplemental - Product Development: Past Research, Present Findings, and Future Directions (Brown and Eisenhardt 1995)

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• The Greening of Technological Processes: An Evolutionary Perspective (Kemp/Soete, 1992)
  Assignment: Offline discussion

Modules 14 & 15 (Online) – Final Presentations
Team Innovation Projects covering one segment or problem in the sustainability world such as transportation, energy, water, ecology, new technologies, pollution, crime, etc.
Readings:
• Skim other student’s papers
Assignment: 20-25 page group paper and online presentation. In the paper each team must describe the role of innovation in a particular sustainability discipline, predict future trends in the field, develop strategies that will help firms gain a sustainable competitive advantage and succeed in the field. The paper should also provide a 1-page executive summary. Include brief summaries of the interviews in an appendix. This last step is an important part of environmental scanning. Groups should choose the topic by consensus. As part of the assignment, the group must interview at least three industry professionals for their perspectives on changes and directions in the field you have chosen for the project. In addition, the paper must contain at least 10 references from scholarly or trade journals. The format will be discussed in the first online class meeting. Students are advised to draw on materials covered in other courses.

References


http://bbhosted.cuny.edu/webapps/portal/frameset.jsp?tab_id=2_1&url=/webapps/blackboard/execute/launcher%3ftype%3dCourse%26id%3d227272_1%26url%3d

http://www.stanford.edu/class/symbsys205/Diffusion%20of%20Innovations.htm


Saxenian, A. (2002), Transnational Communities and the Evolution of Global Production Networks: Taiwan, China and India, Industry and Innovation, Special Issue on Global Production Networks


IS 641
CURRENT TOPICS IN DATABASE SYSTEMS (3 credits)

Pre-requisites: IS 600, IS 602

Course Description
This course will cover the most up-to-date trends in database systems in an in-depth manner. It will further the student’s basic understanding of how a database is organized allowing multiple users to access and update it. It will cover topics that support the IS component of any organization, especially database management systems (DBMS).

Topics might include: DBMS systems, web-based approaches, data warehousing, business intelligence, very large databases, security issues, advanced data models, cooperative databases, data mining, user interfaces, web databases, query languages, expert systems, multimedia database systems.

Learning Objectives
• Understand modern database systems, their design and implementation
• Ability to maintain currency--knowing where to look for further directions

Textbooks, Readings, and Materials

Assessment and Grading
Assessment and Grading will be at the discretion of the course instructor.

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.
IS 642
CURRENT TOPICS IN COMPLEX SYSTEM ANALYSIS (3 credits)

Pre-requisites: IS 600, IS 601

Course Description
This course allows the program to offer additional material in the area of complex systems after the student has gained a general background from pre-requisite courses. Topics might include: interactions, description languages, multiple user interactions and locking, organization complexity, performance issues, modeling, software. It will make use of actual real life examples of complex systems and examine methods for how to improve them making use of software programs.

Learning Objectives
• Understand how to simplify real life complex systems making the extraction able to be analyzed using modeling techniques
• Ability to maintain currency--knowing where to look for further software and hardware implementations

Textbooks, Readings, and Materials

Assessment and Grading
Assessment and Grading will be at the discretion of the course instructor.

Academic Integrity and Administrative Policies
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IS 643
Current Topics in Information Systems (3 credits)

Pre-requisites: IS 600, IS 601, IS 602, IS 603

Course Description
This course allows the program to offer additional material in the broad area of Information Systems after the student has gained a general background from the pre-requisites. This will be an advanced class. Topics might include: effects of internationalism on information systems (language considerations, distributed program creation techniques across time zones, etc.), cooperative information systems, security, threats, internet considerations, filtering, GUI design considerations. Emphasis will be placed on the software and hardware associated with the information systems.

Learning Objectives
Current Topics courses provide the program the ability to keep its curriculum current as technology changes in this fast moving industry. Beyond that, each course will include a set of learning objectives unique to that topic.

Textbooks, Readings, and Materials

Assessment and Grading
Assessment and Grading will be at the discretion of the course instructor.

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.
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Master of Science in Information Systems

IS 661
INDEPENDENT STUDY (1-3 credits)

Pre-requisites: None

Course Description
This course enables students to pursue a project independently in an area that is not available in the course offerings. The subject should be chosen in consultation with a faculty advisor who will act as the student's supervisor, and with the permission of the academic director. A description of the project and its specific goals in the form of a course contract must be put forth for approval. Course credit will be determined by the faculty instructor with the approval of the academic director.

Note: This may be substituted for a 3-credit equivalent of ISUS 651 or combined with 1- or 2-credit sections to equal 3 credits.

Learning Objectives
Learning objectives will be identified for each unique independent study course and contained in a course contract signed by the student and faculty advisor.

Textbooks, Readings, and Materials
Readings and materials will be developed jointly by the student and faculty advisor and become part of the course contract.

Assessment and Grading
Assessment and grading will be at the discretion of the adviser based on the learning objectives agreed to in the course contract.

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.
Specialized Electives: Urban Sustainability
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IS 630
SUSTAINABILITY, SCIENCE, AND SOCIETY (3 credits/45 hours)

Pre-requisites: None

Course Description
The course introduces students to concepts and practices of and challenges to sustainability in cities. A key objective is to review and critique how sustainability planning is being carried out, identify the barriers and bridges to its effective implementation, and to identify the technologies and metrics of success being used to create, catalog, and understand the progress made. A related objective is to analyze the urban systems being impacted by sustainability planning and practices, and how those systems have been modeled. Further, students will reflect and discuss the impact of sustainability projects on people’s lives. The course requires a review of relevant literature and extended case study discussions. Students will gain a greater appreciation of how science can inform the policies and practices that will shape a more sustainable future and the role that information technology may play in this.

Textbooks, Readings, and Materials: Basic Course texts include the following

Additional course readings will include book chapters, government reports, articles from peer-reviewed journals (e.g., Proceedings of the National Academy of Sciences, Science, Nature)

Learning Objectives
understand the workings of, interconnections between, and challenges facing complex urban systems
apply the concept of sustainability to critically examine issues related to the built and natural environments
assess the challenges and opportunities associated with the application of technology to create sustainable urban communities, including the role of mandates, policies, regulations, and financial constraints, and their impact on people and cities

**Assessment and Grading**
30% Participation  
30% Reflection papers/projects  
30% Mid term exam  
10% Final presentation and critique

**Weekly Schedule**
1 - Intro - Dimensions of Sustainability; Framing Sustainability, Technology’s role  
2 - Complex Systems and Complexity  
3 - Innovation, Change, and Tipping Points  
4 - Ecosystems and Ecosystem Services  
5 - Climate Change I: Detection and Attribution  
6 - Climate Change II: Prediction; Planning for Change  
7 - Promoting Sustainability and Governance  
8 - Energy Resources – Alternative, Efficiency  
9 - Food, Agriculture and Water  
10 - Demography and Urbanization  
11 - Public Health  
12 - The Built Environment  
13 - Equity and Environmental Justice  
14 - Future of Sustainability  
15 - Final

**Academic Integrity and Administrative Policies**
This course adheres to the School of Professional Studies’ academic policies. See [http://www.sps.cuny.edu/acad_policies/index.html](http://www.sps.cuny.edu/acad_policies/index.html).

**Selected Readings**
• Holdren, John P., Gretchen C. Daily, and Paul R. Ehrlich. "The Meaning of Sustainability: Bio-
Geophysical Aspects." Excerpted from Defining and Measuring Sustainability. Edited by
• Howarth, Richard. "Intergenerational Justice and the Chain of Obligation." Environmental
• Laws, David, and Lily Pollans. "SunLine Transit: Managing Change for Sustainable
Development." Cambridge, MA: MIT Environmental Technology and Public Policy Program
• Leading Change Toward Sustainability: A Change-Management Guide for Business,
• Lester, Richard, and Michael Piore. Innovation the Missing Dimension. Cambridge, MA:
• Meadows, Dennis, Donella Meadows, and Jorgen Randers. Beyond the Limits: Confronting
Global Collapse, Envisioning a Sustainable Future. White River Junction, VT: Chelsea Green
• Natural Capitalism: Creating the Next Industrial Revolution. Paul Hawken; Amory Lovins;
• Redclift, Michael. "The Multiple Dimensions of Sustainable Development." Geography 76
University Press.
and chapter 1. ISBN: 0385720270. 3 Framing Sustainability Locally: An International
Comparison
• Sitarz, D., ed. Agenda 21: The Earth Summit Strategy to Save Our Planet. Boulder, CO:
• Solow, R. "Sustainability: An Economist's Perspective." In Economics of the Environment.
179-187.
• Sustainability on Campus: Stories and Strategies for Change. Peggy F. Bartlett and Geoffrey
Society Publishers.
• Weber, Matthias, Remco Hoogma, Ben Lane, and Johan Schot. Experimenting with
Sustainable Transport Innovations: A Workbook for Strategic Niche Management. Seville,
• Wenger, E. C., and W. M. Snyder. "Communities of Practice: the Organizational Frontier."

Selected Web Resources:
General
ICLEI (International Council for Local Environmental Initiatives)
Local Agenda 21
Local Sustainability: European Good Practice Information Service
Network for Science and Technology for Sustainability
Rio +5: Managing Local Sustainability
The DISCUS Project: Developing Institutional and Social Capacities for Urban Sustainability (PDF)
The Earth Charter Initiative
World Business Council for Sustainable Development

United States
Austin Sustainable Communities Initiative
Boulder Area Sustainability Information Network
Citizens Network for Sustainable Development
City of Portland, Office of Sustainable Development
Harvard Green Campus Initiative
ICLEI Personal CO₂ Calculator
Institute for Local Self Reliance
Massachusetts Climate Action Network
Northeast Sustainable Energy Association
PlanNYC2030
Redefining Progress
SUSTAIN: Youth Network for Sustainable Development
Sustainable Seattle
SustainLane
The Green Roundtable
The Smart Communities Network
U.S. Conference of Mayors

Europe, Australia
Australian Government, I Department of Environment and Heritage Local Agenda 21 Program
Environ, Leicester, UK
Foundation for the Economics of Sustainability
Local Sustainability Mirror
National Local Leaders in Sustainability Forum
NCDO (Netherlands)
New Economics Foundation, UK
Northern Alliance for Sustainable Development
Our Southwest
Sustainable Cities Research Institute
Sustainable Development Commission
Sustainable Urban Development in Europe (Index of Cases by City)
The Earth Charter Initiative
The Local Sustainability Strategy for Cardiff
The Regional Institute Ltd Sustaining Our Communities
UK Idea and Development Agency
Victorian Local Sustainability Accord
The City University of New York
The School of Professional Studies
At the Graduate School and University Center

Master of Science in Information Systems

IS 611

OVERVIEW OF CURRENT TECHNOLOGIES FOR SUSTAINABILITY (3 credits/45 hours)

Pre-requisites: None

Course Description
This research course uses a case study format to examine the underlying technologies that offer potential for improving urban sustainability and enabling well connected cities. Areas of study may include sensors and actuators; transportation systems; water distribution, waste, building control systems; electric power control systems; renewable energy delivery systems; analytics and optimization for decision-making, sustainability policy, and complex systems of systems. Current papers discussing real-life examples from urban areas around the world will be used. This course ties in aspects of behavioral economics, psychology, sociology, social media, and urban design and explores the nature of human interaction with systems. Guest speakers from New York City government and industry will enrich the student experience by providing additional perspectives on the emerging field.

Learning Objectives
The objectives of this course are to:
Knowledge: Facilitate student understanding of important concepts, theories, and research findings in the fields of Information Systems, and Urban Sustainability and Leadership.

Respect for theory and research: Help students appreciate that highly competent urban leaders and managers understand energy and efficiency, sustainability, and information systems concepts and that accurate knowledge comes from rigorous research, development and deployment of methods, tools, and solutions.

Application: Help students understand how theories, concepts, and research results can be applied through the examination of case studies and best practices.

Skills: Provide students with the opportunity to explore and develop basic skills in information systems for urban sustainability.

Texts/Materials


IBM Global Innovation Outlook 1.0 (on Healthcare, Government and Its Citizens, The Business of Work and Life),
IBM Global Innovation Outlook 2.0 (on The Future of the Enterprise, Transportation, Environment),
IBM Global Innovation Outlook on Security and Society,
IBM Global Innovation Outlook on Water and the Oceans,
Selected articles from the Journal of Urban Technology, editor Richard Hanley.

Schedule

Concepts:

**Week 1:** Definition of Urban Sustainability, What is Sustainable Development?, Smart Cities: Definitions and Outcomes - Maturity Model, Component Business Model, City Geography Markup Language, SOA, Industry Frameworks, Cross-Domain Urban Sustainability Systems

**Week 2:** Role of Digital Technologies (e.g. municipal wireless networks, ultra-high speed broadband, digital TV, and enablement of services), Sensors and Actuators, Appliances (e.g. Tridium, Libelium, others), IBM Green Sigma, Real-Time Aware, Presentation by CUNY Campus Facilities Manager
Week 3: Modeling and Simulation – System Dynamics, Optimization, Analytics, Behavior Modeling, Behavior Modification

**Case Studies:**

**Week 4:** Energy & Utilities: Smart Grid Maturity Model and Olympic Peninsula Project, DONG Energy, CentrePoint, Malta

**Week 5:** Buildings: Energy, Asset and Maintenance Lifecycle Management, St. Regis Hotel in Shanghai, Energy Analytics for Public Buildings, Data Centers, Green Sigma Dashboard

**Week 6:** Transportation: Stockholm Congestion Tax Project, Singapore Land Transit Authority, London Congestion Charging

**Week 7:** Social Computing: Smart City and the Individual – New York City 311

**Week 8:** Water: Beacon Institute and the Hudson River, Dubuque, Malta, Rotterdam, Galway Bay in Ireland

**Week 9:** Renewable Energy: Solar and Wind, Variable Demand Issues

**Week 10:** Storage and Batteries, Plug-In Electric Vehicles

**Week 11:** Public Safety: Emergency Response, Digital Video Surveillance, Entity and Crime Analytics, Fire Safety Building Analytics, Coordinated Building Inspection and Data Analysis System

**Week 12:**
Panel Discussions with Architects, Urban Planners, Construction Companies, etc.,
Online game [http://www.powerupthegame.com](http://www.powerupthegame.com),
Paper due on “How would you apply what you’ve learned in this course to CUNY’s campus to improve its sustainability?”

**Week 13:** Review

**Week 14:** Final Exam

**Grading**
- 20% Midterm
- 30% Project
- 20% Class Participation
- 30% Final

**Academic Integrity and Administrative Policies**
This course adheres to the School of Professional Studies’ academic policies. See [http://www.sps.cuny.edu/acad_policies/index.html](http://www.sps.cuny.edu/acad_policies/index.html).
IS 612
ALGORITHMIC, MODELING, AND SIMULATION SOLUTIONS (3 credits/45 hours)

Pre-requisites: IS 600, IS 601, IS 602, IS 603, IS 604

Course Description
This course discusses technical papers that use algorithmic and mathematical modeling solutions as well as simulations for improving urban sustainability. Topics include, among others, ad-hoc sensor networks and algorithmic solutions to building control systems design projects. It will integrate the material in the prerequisite courses illustrating the application of these techniques to real urban situations. Students will write and give presentations showing their understanding of the issues and the solutions suggested and their limitations.

Learning Objectives
This seminar course builds on the practical knowledge and skills acquired in the foundation courses by providing a strong theoretical base. At the completion of this course, students will develop a foundation in:
- the limitations of modeling of complex systems
- the research and professional literatures that make use of models of urban problems
- the ability to articulate complex concepts of systems models
- the ability to think critically about published literature in the field.

Assessment and Grading
Each student will be expected to give at least two presentations during the class on papers and other material and write critiques of other presentations.
20% Participation
40% Papers/Projects/Presentations
20% Midterm exam
20% Final presentation and critique (instructor and peer)

Textbooks, Readings, and Materials
The readings will be based on current journal articles and chapters in books. Examples of where material will be drawn from include:
Primary Journal: Journal of Environment modeling and software, Elsevier


Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.

Weekly Schedule
Weeks 1-4: Literature review
Weeks 5-8: Peer led discussions of the papers. Reflection papers due week 8
Week 9: Midterm exam
Weeks 9-14: Student presentations. Both the instructor and students will provide written feedback.
Week 15: Peer-led critique of final presentations
Pre-requisites: None

Course Description
This course will cover the in detail the most up-to-date trends in energy distribution, consumption, monitoring, and conservation, including building control systems. Modeling and economic considerations will be a focal part of the course. Emphasis will be placed on software that is currently available for energy distribution, building usage, and conservation. Topics will vary, sometimes with a particular emphasis.

Learning Objectives
Current Topics courses provide the program the ability to keep its curriculum current as technology changes in this fast moving industry. Beyond that, each course will include a set of learning objectives unique to that topic.

Textbooks, Readings, and Materials
Readings and materials will be unique to each Current Topics course.

Assessment and Grading
Assessment and Grading will be at the discretion of the course instructor.

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.
IS 645
CURRENT TOPICS IN URBAN SUSTAINABILITY: TRANSPORTATION (3 credits)

Pre-requisites: None

Course Description
The course will cover the most up-to-date trends in urban transportation systems, including both mass transit and surface transportation issues in an in-depth manner. Trends that rely on information systems, such as congestion pricing, peak demand parking, real-time transit information, and priority signaling, among others, will be considered. Emphasis will be placed on software and hardware implications.

Learning Objectives
Current Topics courses provide the program the ability to keep its curriculum current as technology changes in this fast moving industry. Beyond that, each course will include a set of learning objectives unique to that topic.

Textbooks, Readings, and Materials
Readings and materials will be unique to each Current Topics course.

Assessment and Grading
Assessment and Grading will be at the discretion of the course instructor.

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.
The City University of New York
The School of Professional Studies
At the Graduate School and University Center

Master of Science in Information Systems

IS 646
CURRENT TOPICS IN URBAN SUSTAINABILITY: COMPLEX SYSTEMS (3 credits)

Pre-requisites: None

Course Description
The course will cover the most up-to-date trends in urban systems and their interrelationships in an in depth manner. Emphasis will be placed on software and hardware implications.

Learning Objectives
Current Topics courses provide the program the ability to keep its curriculum current as technology changes in this fast moving industry. Beyond that, each course will include a set of learning objectives unique to that topic.

Textbooks, Readings, and Materials
Readings and materials will be unique to each Current Topics course.

Assessment and Grading
Assessment and Grading will be at the discretion of the course instructor.

Academic Integrity and Administrative Policies
This course adheres to the School of Professional Studies’ academic policies. See http://www.sps.cuny.edu/acad_policies/index.html.
## APPENDIX II - TABLE 1b: GRADUATE PROGRAMS SCHEDULE

- Indicate academic calendar type: X_Semester _Quarter _Trimester _Other (describe)
- Label each term in sequence, consistent with the institution’s academic calendar (e.g., Fall 1, Spring 1, Fall 2)
- Use the table to show how a typical student may progress through the program; copy/expand the table as needed.

### Term: Spring 2012

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Term credit total: 21

### Term: Fall 2012

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Term credit total: 37-39

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Proposal to Establish a Master of Science in Information Systems
CUNY School of Professional Studies
Approved by the School of Professional Studies Curriculum Committee, July 15, 2010
Approved by the School of Professional Studies Governing Council, September 10, 2010
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<td></td>
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</tr>
<tr>
<td>IS 643 Current Topics in Information Systems</td>
<td>3</td>
<td>IS 600, 601, 602, 603</td>
<td></td>
</tr>
<tr>
<td>IS 644 Current Topics in Urban Sustainability: Energy</td>
<td>3</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>IS 645 Current Topics in Urban Sustainability: Transportation</td>
<td>3</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>IS 661 Independent Study</td>
<td>3</td>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

**Term credit total:** 46-48

### Program Totals:

- **Credits:** 36

**Identify any comprehensive, culminating element(s) (e.g., thesis or examination), including course number if applicable:**

**New:** indicate if new course  
**Prerequisite(s):** list prerequisite(s) for the noted courses
# APPENDIX III – TABLE 2: FULL-TIME FACULTY

Faculty teaching at the graduate level must have an earned doctorate/terminal degree or demonstrate special competence in the field. Provide information on faculty members who are **full-time at the institution** and who will be teaching each course in the major field or graduate program. The application addendum for professional licensure, teacher certification, or educational leadership certification programs may provide additional directions for those types of proposals.

<table>
<thead>
<tr>
<th>Faculty Member Name and Title (include and identify Program Director)</th>
<th>Program Courses to be Taught</th>
<th>Percent Time to Program</th>
<th>Highest and Other Applicable Earned Degrees &amp; Disciplines (include College/University)</th>
<th>Additional Qualifications: list related certifications/licenses; occupational experience; scholarly contributions, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Ted Brown—Program Director Executive Director, Ph.D. Program in Computer Science Executive Director, CUNY Institute for Software Design and Development</td>
<td>IS 612 Algorithmic, Modeling, and Simulation Solutions <strong>IS 698</strong> IS Master’s Research Project I <strong>IS 699</strong> IS Master’s Research Project II</td>
<td>20</td>
<td>Ph.D., Operations Research and Industrial Engineering, New York University</td>
<td>CUNY faculty member in computer science since 1971. Longtime involvement with New York City IT/software industry, including board member of the New York City Software Industry Association and New York Technology Council.</td>
</tr>
<tr>
<td>Dr. Felisa J. Vazquez-Abad Professor, Computer Science, Hunter College and The Graduate School and University Center</td>
<td>IS 603 Advanced Statistics IS 604 Simulation and Presentation</td>
<td>10</td>
<td>Ph.D., Applied Mathematics, Brown University</td>
<td>Expert in the area of optimization of complex systems under uncertainty, primarily to build efficient self-regulated learning systems. Founder and director of the SoSmart center (Stochastic Optimization and Statistical Modeling for Applied Research and Technology) at Hunter College.</td>
</tr>
<tr>
<td>* TBD</td>
<td>IS 602 Advanced Programming Techniques IS 641 Current Topics in Databases IS 698 IS Master’s Research Project I IS 699 IS Master’s Research Project II</td>
<td>20</td>
<td>Ph.D.</td>
<td>TBD</td>
</tr>
<tr>
<td>* TBD</td>
<td>IS 600 Information and Systems IS 642 Complex Systems Analysis IS 646: Current Topics in Urban Sustainability: Complex Systems IS 698 IS Master’s Research Project I IS 699 IS Master’s Research Project II</td>
<td>20</td>
<td>Ph.D.</td>
<td>TBD</td>
</tr>
</tbody>
</table>

* The program will support a half-time academic director and two consortial faculty positions. In the second year of the program, two additional consortial faculty may be added to support student advisement and research, based on sufficient enrollment. These positions will be drawn from full-time faculty from around the University or from appropriate positions in industry. Candidates for the positions will be identified after the proposed program is approved.

** These faculty will supervise research projects as student interest overlaps with a faculty member’s current research.
## APPENDIX IV – TABLE 3: PART-TIME FACULTY

Faculty teaching at the graduate level must have an earned doctorate/terminal degree or demonstrate special competence in the field. Provide information on part-time faculty members who will be teaching each course in the major field or graduate program.

<table>
<thead>
<tr>
<th>Faculty Member Name and Title*</th>
<th>Program Courses to be Taught</th>
<th>Highest and Other Applicable Earned Degrees &amp; Disciplines (include College/University)</th>
<th>Additional Qualifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Lou D’Alotto Professor, Computer Science, York College</td>
<td>IS 601 Engineering Mathematics for Systems</td>
<td>Ph.D., Computer Science, City University of New York/Graduate Center</td>
<td>CUNY faculty member in computer science since 1979.</td>
</tr>
<tr>
<td>Dr. Barbara H. Edington, PMP Adjunct Assistant Professor, School of Professional Studies Assistant Professor, Business and Technology, St. Francis College</td>
<td>IS 610 Project Management</td>
<td>Doctorate of Professional Services in Computing, Computer Science &amp; Information Systems, Pace University M.B.A., Temple University</td>
<td>Over 20 years in the investment industry managing major investment and operational projects that incorporated technical change management and technology alignment. Authored almost 20 articles or manuals on the intersection of business and information technology. Certified project manager (PMP) since 2005. Baruch College faculty member in statistics and computer information systems since 1983. Author of dozens of articles on simulation and statistics, many in the context of ethics.</td>
</tr>
<tr>
<td>Dr. Linda Weiser Friedman Professor, Statistics and Computer Information Systems, Baruch College</td>
<td>IS 643 Current Topics in Information Systems</td>
<td>Ph.D., Operations Research Polytechnic Institute of N.Y.</td>
<td></td>
</tr>
<tr>
<td>Dr. Nancy Griffeth Professor, Math and Computer Science, Lehmann College</td>
<td>IS 602 Advanced Programming Techniques</td>
<td>Ph.D., University of Chicago</td>
<td>Faculty at Lehman College since 2003. Areas of interests include parallel and distributed computing, networked systems, and telecommunication systems.</td>
</tr>
<tr>
<td>Dr. Camille N. Kamga Substitute Assistant Professor, Civil Engineering, City College Acting Director, University Transportation Research Center, City College</td>
<td>IS 600 Information and Systems IS 645 Current Topics in Sustainability: Transportation **IS 698 IS Master's Research Project I **IS 699 IS Master's Research Project II</td>
<td>Ph.D., Transportation Engineering, City College</td>
<td>2006 recipient of the Milton Pikarsky Award for Outstanding Ph.D. Dissertation in Science and Technology given by the Council of University Transportation Centers. Researcher on over a dozen projects related to transportation modeling and management. Former management information systems consultant.</td>
</tr>
<tr>
<td>Dr. Mete Kok Professor, Computer Science, Borough of Manhattan Community College</td>
<td>IS 602 Advanced Programming Techniques</td>
<td>Ph.D., Computer Science, City University of New York/Graduate Center</td>
<td>Professor at Borough of Manhattan Community College since 1985. Former programmer at New York Power Authority.</td>
</tr>
<tr>
<td>Dr. William Duncan Solecki Professor, Geography, Hunter College and The Graduate School and University Center Director, CUNY Institute for Sustainable Cities</td>
<td>IS 630 Urban Society and Sustainability IS 611 Overview of Current Technologies for Sustainability **IS 698 IS Master’s Research Project I **IS 699 IS Master’s Research Project II</td>
<td>Ph.D., Geography, Rutgers University</td>
<td>Expert on urban environmental change and urban spatial development. Co-chair of the New York City Panel On Climate Change and member of the International Geographical Union (IGU) Megacity Study Group and the Urbanization and Global Environmental Change Scientific Steering Committee of the International Human Dimensions Programme (IHDP). Author of over fifty articles on sustainability and the environment.</td>
</tr>
</tbody>
</table>
Faculty teaching at the graduate level must have an earned doctorate/terminal degree or demonstrate special competence in the field. Provide information on part-time faculty members who will be teaching each course in the major field or graduate program.

<table>
<thead>
<tr>
<th>Faculty Member Name and Title*</th>
<th>Program Courses to be Taught</th>
<th>Highest and Other Applicable Earned Degrees &amp; Disciplines (include College/University)</th>
<th>Additional Qualifications: list related certifications/licenses; occupational experience; scholarly contributions, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdullah Uz Tansel</td>
<td>IS 641 Current Topics in Database Systems</td>
<td>MBA, University of Southern California PhD, Middle East Technical University, Ankara Turkey</td>
<td>Head of the editorial board that published the first book on temporal databases in 1993. Author of many articles in the conferences and journals of ACM and IEEE Computer Society. A professor of Computer Information Systems at Baruch College since 1983. Research interests are database management systems, temporal databases and data mining.</td>
</tr>
</tbody>
</table>

* Some adjunct faculty have already been identified for the program, many of which are also full-time CUNY faculty.
** These faculty will supervise research projects as student interest overlaps with a faculty member’s current research.
# APPENDIX V – TABLE 4: FACULTY TO BE HIRED

If faculty must be hired, specify the number and title of new positions to be established and minimum qualifications.

<table>
<thead>
<tr>
<th>Title/Rank of Position</th>
<th>No. of New Positions</th>
<th>Minimum Qualifications (including degree and discipline area)</th>
<th>F/T or P/T</th>
<th>Percent Time to Program</th>
<th>Expected Course Assignments</th>
<th>Expected Hiring Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjunct Lecturer*</td>
<td>1</td>
<td>Ph.D., Technology Management, Polytechnic Institute of New York University</td>
<td>P/T</td>
<td></td>
<td>IS 611 Overview of Current Technologies for Sustainability</td>
<td>Fall 2012</td>
</tr>
<tr>
<td>Bojan Angelov</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michael Bobker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Founder and Director, Building Performance Lab, CUNY Institute for Urban Systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjunct Lecturer*</td>
<td>1</td>
<td>Ph.D., Technology Management, NYU Polytechnic (exp. May 11) MBA, Engineering Management, University of Dallas M.S., Electrical Engineering, Vanderbilt University</td>
<td>P/T</td>
<td></td>
<td>IS 613 Managing Innovation and Strategy</td>
<td>Spring 2013</td>
</tr>
<tr>
<td>Paul Russo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director of Online Programs, CUNY School of Professional Studies Interim Project Manager, CUNY New Community College Initiative Adjunct Assistant Professor, Brooklyn College, Department of Economics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjunct Instructors</td>
<td>10</td>
<td>Ph.D. or graduate degree with appropriate professional experience.</td>
<td>P/T</td>
<td>As needed.</td>
<td></td>
<td>As needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Some specific adjunct faculty have already been identified for the program.
### APPENDIX VI – TABLE 5: NEW RESOURCES

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Time Faculty [3]</td>
<td>$10,640</td>
<td>$42,560</td>
<td>$42,560</td>
<td>$42,560</td>
<td>$42,560</td>
</tr>
<tr>
<td>Part Time Faculty [3]</td>
<td>$17,600</td>
<td>$83,600</td>
<td>$167,200</td>
<td>$224,400</td>
<td>$255,200</td>
</tr>
<tr>
<td>Full Time Staff [3]</td>
<td>$0</td>
<td>$75,225</td>
<td>$77,482</td>
<td>$79,807</td>
<td>$82,201</td>
</tr>
<tr>
<td>Part Time Staff [3]</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Library (Includes Staffing)</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Equipment</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Laboratories</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Supplies &amp; Expenses (OTPS)</td>
<td>$23,500</td>
<td>$33,605</td>
<td>$33,713</td>
<td>$28,825</td>
<td>$28,939</td>
</tr>
<tr>
<td>Capital Expenditures</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Other [5]</td>
<td>$37,500</td>
<td>$50,500</td>
<td>$18,500</td>
<td>$13,500</td>
<td>$64,500</td>
</tr>
<tr>
<td><strong>Total all</strong></td>
<td>$89,240</td>
<td>$285,490</td>
<td>$339,455</td>
<td>$389,091</td>
<td>$473,400</td>
</tr>
</tbody>
</table>
## APPENDIX VII – TABLE 6: PROJECTED REVENUE

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition Revenue[3]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01. From Existing Sources[4]</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>02. From New Sources[5]</td>
<td>$93,425</td>
<td>$303,799</td>
<td>$506,248</td>
<td>$695,697</td>
<td>$785,735</td>
</tr>
<tr>
<td>03. Total</td>
<td>$93,425</td>
<td>$303,799</td>
<td>$506,248</td>
<td>$695,697</td>
<td>$785,735</td>
</tr>
<tr>
<td>State Appropriation[6]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04. From Existing Sources [4]</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>05. From New Sources [5]</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>06. Total</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Other Revenue[7]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>07. From Existing Sources [4]</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>08. From New Sources [5]</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>09. Total</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Grand Total[8]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. From Existing Sources [4]</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$93,425</td>
<td>$303,799</td>
<td>$506,248</td>
<td>$695,697</td>
<td>$785,735</td>
</tr>
</tbody>
</table>
### APPENDIX VIII – TABLE 7: FIVE-YEAR FINANCIAL PROJECTIONS FOR PROGRAM WORKSHEET

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DIRECT OPERATING EXPENSES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Include additional expenses incurred by other programs when satisfying needs of new program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Full Time Faculty Replacement Costs (list separately)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Full Time Faculty Overload (include Summer)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Full Time Faculty Base Salary (list separately)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Full Time Faculty Overload (include Summer)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Faculty Re-assigned Time (list separately)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consortial Faculty</td>
<td>$8,000</td>
<td>$32,000</td>
<td>$32,000</td>
<td>$32,000</td>
<td>$32,000</td>
</tr>
<tr>
<td>Full Time Employee Fringe Benefits (33.0%)</td>
<td>$2,640</td>
<td>$10,560</td>
<td>$10,560</td>
<td>$10,560</td>
<td>$10,560</td>
</tr>
<tr>
<td><strong>Total (Links to Full-Time Faculty on Table 5 - New Resources)</strong></td>
<td><strong>$10,640</strong></td>
<td><strong>$42,560</strong></td>
<td><strong>$42,560</strong></td>
<td><strong>$42,560</strong></td>
<td><strong>$42,560</strong></td>
</tr>
<tr>
<td>Part Time Faculty Actual Salaries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjunct Faculty</td>
<td>$16,000</td>
<td>$76,000</td>
<td>$152,000</td>
<td>$204,000</td>
<td>$232,000</td>
</tr>
<tr>
<td>Part Time Faculty Actual Fringe Benefits (10%)</td>
<td>$1,600</td>
<td>$7,600</td>
<td>$15,200</td>
<td>$20,400</td>
<td>$23,200</td>
</tr>
<tr>
<td><strong>Total (Links to Part-Time Faculty on Table 5 - New Resources)</strong></td>
<td><strong>$17,600</strong></td>
<td><strong>$83,600</strong></td>
<td><strong>$167,200</strong></td>
<td><strong>$224,400</strong></td>
<td><strong>$255,200</strong></td>
</tr>
<tr>
<td>Full Time Staff Base Salary (list separately)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Director (@ 50% of time)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Time Staff Fringe Benefits (33%)</td>
<td>$0</td>
<td>$18,665</td>
<td>$19,225</td>
<td>$19,802</td>
<td>$20,396</td>
</tr>
<tr>
<td><strong>Total (Links to Full-Time Staff on Table 5 - New Resources)</strong></td>
<td><strong>$0</strong></td>
<td><strong>$75,225</strong></td>
<td><strong>$77,482</strong></td>
<td><strong>$79,807</strong></td>
<td><strong>$82,201</strong></td>
</tr>
<tr>
<td><strong>(DO NOT INCLUDE NEW LIBRARY STAFF IN THIS SECTION)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part Time Staff Base Salary (list separately)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Assistants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Hourly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part Time Employee Fringe Benefits (10.0%)</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total (Links to Part-Time Staff on Table 5 - New Resources)</strong></td>
<td><strong>$0</strong></td>
<td><strong>$0</strong></td>
<td><strong>$0</strong></td>
<td><strong>$0</strong></td>
<td><strong>$0</strong></td>
</tr>
</tbody>
</table>
## Equipment

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Hardware</td>
<td>$0</td>
</tr>
<tr>
<td>Office Furniture</td>
<td>$0</td>
</tr>
<tr>
<td>Other (Specify)</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$0</td>
</tr>
</tbody>
</table>

## Laboratorios

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Equipment</td>
<td>$0</td>
</tr>
<tr>
<td>Other (list separately)</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$0</td>
</tr>
</tbody>
</table>

## Supplies and Expenses (OTPS)

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultants and Honoraria</td>
<td>$1,000</td>
</tr>
<tr>
<td>Office Supplies</td>
<td>$1,030</td>
</tr>
<tr>
<td>Instructional Supplies</td>
<td>$1,061</td>
</tr>
<tr>
<td>Faculty Development</td>
<td>$1,093</td>
</tr>
<tr>
<td>Travel and Conferences</td>
<td>$1,126</td>
</tr>
<tr>
<td>Membership Fees</td>
<td>$20,000</td>
</tr>
<tr>
<td>Advertising and Promotion</td>
<td>$20,000</td>
</tr>
<tr>
<td>Accreditation</td>
<td>$20,000</td>
</tr>
<tr>
<td>Computer Software</td>
<td>$2,500</td>
</tr>
<tr>
<td>Computer License Fees</td>
<td>$2,575</td>
</tr>
<tr>
<td>Computer Repair and Maintenance</td>
<td>$2,652</td>
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<tr>
<td><strong>Total</strong></td>
<td>$23,500</td>
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## CAPITAL EXPENDITURES

<table>
<thead>
<tr>
<th>Facility Renovations</th>
<th>Classroom Equipment</th>
<th>Other (list separately)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total (Links to Capital Expenditures on Table 5 - New Resources)</th>
<th>$0</th>
<th>$0</th>
<th>$0</th>
<th>$0</th>
<th>$0</th>
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<tbody>
<tr>
<td>Other (list separately)</td>
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<tr>
<td>Intellectual Property</td>
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<td>$40,000</td>
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<tr>
<td>Miscellaneous</td>
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<tr>
<td>Library Contract Services</td>
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<td>$1,000</td>
<td>$12,000</td>
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<td><strong>Total (Links to Other on Table 5 - New Resources)</strong></td>
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<td><strong>$50,500</strong></td>
<td><strong>$18,500</strong></td>
<td><strong>$13,500</strong></td>
<td><strong>$64,500</strong></td>
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</tbody>
</table>
## APPENDIX IX – TABLE 8: FIVE-YEAR REVENUE PROJECTIONS FOR PROGRAM WORKSHEET

<table>
<thead>
<tr>
<th>TUITION REVENUE</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fall 11</td>
<td>Spring 12</td>
<td>Fall 12</td>
<td>Spring 13</td>
<td>Fall 13</td>
</tr>
<tr>
<td>Cohort #1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Time</td>
<td>5</td>
<td>28</td>
<td>25</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Part Time</td>
<td>35</td>
<td>26</td>
<td>24</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Cohort #2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Time</td>
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<td>31</td>
<td>23</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Part Time</td>
<td>1</td>
<td>25</td>
<td>22</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Cohort #3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Time</td>
<td>1</td>
<td>17</td>
<td>15</td>
<td>14</td>
<td></td>
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<tr>
<td>Part Time</td>
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<td>16</td>
<td>14</td>
<td>14</td>
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</tr>
<tr>
<td>Cohort #4</td>
<td></td>
<td></td>
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<tr>
<td>Full Time</td>
<td>3</td>
<td>36</td>
<td>27</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Part Time</td>
<td>2</td>
<td>29</td>
<td>25</td>
<td>24</td>
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<tr>
<td>Cohort #5</td>
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<tr>
<td>Full Time</td>
<td>1</td>
<td>20</td>
<td>18</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Part Time</td>
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<td>17</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Cohort #6</td>
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<td>Full Time</td>
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<td>40</td>
<td>4</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Part Time</td>
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<td>32</td>
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<td>28</td>
<td></td>
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<tr>
<td>Cohort #7</td>
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<td>Full Time</td>
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<td>40</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Part Time</td>
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<td>28</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cohort #8</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Full Time</td>
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<td>45</td>
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<td>36</td>
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<tr>
<td>Part Time</td>
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<tr>
<td>Cohort #9</td>
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</tr>
<tr>
<td>Full Time</td>
<td>2</td>
<td>40</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Part Time</td>
<td>2</td>
<td>32</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Head Count - Full-Time</strong></td>
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<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Head Count - Part-Time</strong></td>
<td>0</td>
<td>35</td>
<td>59</td>
<td>72</td>
<td>101</td>
</tr>
<tr>
<td><strong>TOTAL HEADCOUNT</strong></td>
<td>0</td>
<td>40</td>
<td>62</td>
<td>75</td>
<td>106</td>
</tr>
</tbody>
</table>
## Proposal to Establish a Master of Science in Information Systems

**CUNY School of Professional Studies**

Approved by the School of Professional Studies Curriculum Committee, July 15, 2010

Approved by the School of Professional Studies Governing Council, September 10, 2010

### Yearly Revenue Table

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full Time Tuition</strong></td>
<td>$3,865</td>
<td>$3,942</td>
<td>$4,021</td>
<td>$4,102</td>
<td>$4,184</td>
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<tr>
<td><strong>Full Time Fees</strong></td>
<td>$190</td>
<td>$190</td>
<td>$190</td>
<td>$190</td>
<td>$190</td>
</tr>
<tr>
<td><strong>Full-Time Revenue</strong></td>
<td>$20,275</td>
<td>$12,397</td>
<td>$21,056</td>
<td>$34,333</td>
<td>$48,110</td>
</tr>
</tbody>
</table>

**Part Time Seats Per Student (average)**

|                        | 2      | 2      | 2      | 2      | 2      |

**Part Time Tuition Per Seat**

|                        | $975   | $995   | $1,014 | $1,035 | $1,055 |
| **Part Time Fees**     | $140   | $140   | $140   | $140   | $140   |
| **Part-Time Revenue**  | $73,150| $125,611| $218,071| $323,759| $346,187|

**Total Tuition Revenue Per Term**

|                        | $93,425| $138,008| $239,127| $358,092| $394,296|

| **TOTAL YEARLY TUITION REVENUE** | $93,425 | $303,799 | $506,248 | $695,697 | $785,735 |
| **Total Existing State Appropriations** | $0 | $0 | $0 | $0 | $0 |
| **Total New State Appropriations** | $0 | $0 | $0 | $0 | $0 |
| **TOTAL STATE APPROPRIATIONS** | $0 | $0 | $0 | $0 | $0 |
| **Total Existing Other Resources** | $0 | $0 | $0 | $0 | $0 |
| **Total New Other Resources** | $0 | $0 | $0 | $0 | $0 |
| **TOTAL OTHER RESOURCES** | $0 | $0 | $0 | $0 | $0 |
| **TOTAL REVENUE** | $93,425 | $303,799 | $506,248 | $695,697 | $785,735 |

### Assumptions (list assumptions):

1. Tuition reflects the rates approved for Spring 2011 with 2% annual increases.

2. Based on available retention data, the retention is as follows: 1 term=80%, 2 terms=75%, 3 terms=70%, 4 terms=69%, 5 terms=67%.
APPENDIX X – SED APPLICATION FOR DISTANCE EDUCATION FORMAT
Application for Addition of the Distance Education Format to a Registered Program

Name of Institution: CUNY School of Professional Studies at the Graduate School and University Center

CEO or Designee: Brian Peterson, Associate Dean for Administration and Finance

Signature: Date:

The signature of the institutional representative indicates the institution’s commitment to support the proposed distance education program.

Distance Education Contact Person: George Otte, Associate Dean of Academic Affairs

Telephone: (212) 817-7145 Fax: (212) 817-2990
E-mail: george.otte@mail.cuny.edu

Program Title: M.S. in Information Systems Program Code: TBD

Degree or Certificate Awarded: M.S. HEGIS Code: TBD

Anticipated enrollment in distance program:

Initial: 40 Maximum by year 3: 166

Term length (in weeks) for the distance program: 15

(Is this the same as term length for classroom program?) Yes x No

How much "instructional time" is required per week per credit for a distance course in this program?

Answer: Instructional time is the same as traditional in-person courses – 45 hours per course.

(Do not include time spent on activities that would be done outside "class time", such as research, writing assignments, or chat rooms.)

What proportion or percentage of the program will be offered in Distance Education format?

Answer: 100%
**Part A: Institution-wide Issues:** Submit this part for the first Distance Education program proposed by your institution. This will be kept in a master file, and will not need to be resubmitted for each new proposed online program, unless there are changes.

**Answer:** This is not the first online degree program at the School of Professional Studies.

**Part B: Program-Specific Issues:** Submit this part for each new request to add Distance Education Format to a registered program.

1. **LEARNING DESIGN**
   
   **How does your institution ensure that the same academic standards and requirements are applied to the program on campus and through distance learning?** If the curriculum in the Distance Education program differs from that of the on-ground program, please identify the differences.

   **Answer:** Online programs at the CUNY School of Professional Studies are designed, developed and implemented according to the New York State Education Department's Principles and Standards of Good Practice for Distance Education. The Master of Science degree in Information Systems will also follow best practices in online education identified by the Middle States Commission on Higher Education and the Western Cooperative for Educational Telecommunications. These certifying organizations expect colleges and universities to demonstrate their institutional commitment to a new program. In the case of the Master of Science degree in Information Systems, CUNY has proven its commitment through its insistence on academic rigor, its investment of resources in learner support, and its mandate for ongoing program evaluation and continuous improvement – a commitment and capacity further validated by the success of the Online Master of Science degree in Business Management and Leadership as well as two other fully online undergraduate degrees.

   As is the case for these current degrees, the Dean will oversee and implement continuous improvement by assessing student satisfaction, learning effectiveness, student outcomes, and faculty satisfaction. Student feedback, evidence of student progress, completion rates, and post-completion outcomes will be monitored and used to guide program improvement. Faculty meetings to discuss curriculum, teaching issues, and faculty needs will be held regularly. Emphasis will be given to opportunities for faculty development and mentoring. Faculty will receive any training they need in the course management system, in developing learning objectives, and in instructional design and multimedia as well as class management and assessment. Though due attention will be given to the use of software, hardware, learning objects, and online resources, the primary focus will be on effective teaching and learning. For this degree we plan to develop a training course for faculty in online instruction.

   In addition to internal control processes, the School of Professional Studies will participate in Middle States reviews as a component of the Graduate School and University Center.

2. **Are the courses that make up the distance learning program offered in a sequence or configuration that allows timely completion of requirements?**

   **Answer:** Yes, the courses will be offered in a configuration that allows timely completion of requirements. The course offering schedule will provide all students with the opportunity to enroll full-time each semester and to meet enrollment requirements for financial-aid eligibility.

3. **How do faculty ensure that the technological tools used in the program are appropriate for the content and intended learning outcomes?**
Answer: The new Master of Science degree in Information Systems will use the complete suite of online education tools offered by the University. In addition, it will utilize a live online meeting and collaboration platform for course and project activities that require immediate feedback and synchronous discussion. Decisions about "which technologies to use for which activities" were derived from previous experience in the online programs offered at the School of Professional Studies and a long history of online education at the City University of New York.

As part of the program’s overall quality control initiative, consortial faculty and other instructional staff meet each semester to evaluate individual student progress as well as macro-level program trends. Critical to these discussions are effective pedagogies and appropriate technologies. Faculty can draw on their own experiences with these technologies and from student input from end-of-term surveys. At these meetings, the group will set and refine the agenda for the year to come.

4. How does the program provide for appropriate and flexible interaction between faculty and students, and among students?

Answer: The program includes both synchronous and asynchronous components. Students will meet online with their instructor and classmates as they do in a traditional face-to-face setting through the use of online collaboration tools. Meeting online is typical in the information systems profession, as it is in other technical professions.

In addition to synchronous technologies, the program will utilize the University’s Blackboard course management system including many innovative plug-ins that allow students to collaborate efficiently between live meetings. Students will participate in offline discussions, coauthor team projects, keep running journals of their field experiences, create their own blogs for communicating research results, and post working visualizations. For those times that students wish to work together in small groups, they will have access to GoToMeeting, an online meeting tool that will allow students located anywhere to see each other’s computer screens, coauthor a document or spreadsheet simultaneously, and record their meeting.

5. How do faculty teaching online courses verify that students are doing their own work?

Answer: All students are bound by the academic policies established by the School of Professional Studies, and published in the School’s Web site, academic handbook, and annual bulletin. However, that does not diminish the need to develop assessment mechanisms that ensure each student leaves with the knowledge and skills expected of program graduates. To make certain that each student is doing his or her own work, faculty often replace traditional quizzes and exams that test for facts and information acquisition with project-based work, which assess practice-based competencies and has longer time-on-task requirements.

With project-based assessment, faculty often require pre-project proposals and other incremental submissions that establishes a narrative pattern which when changed in mid-
stream makes cheating obvious. Further, the extended submission stream makes it difficult for anyone to serve as a “stand in,” as could happen with isolated remote exams. Public course discussion forums provide another device that establishes each student’s voice which is hard for someone else to reproduce. In the case of the M.S in Information Systems, students may be required to participate in industry standard code reviews and debugging sessions.

In addition, when faculty do give exams, the questions are generally open-ended, so that students must synthesize the material from previous learning modules. This technique limits the chances of someone else doing the students’ work.

II. OUTCOMES AND ASSESSMENT

1. Distance learning programs are expected to produce the same learning outcomes as comparable classroom-based programs. How are these learning outcomes identified -- in terms of knowledge, skills, or credentials -- in course and program materials?

Answer: Each course syllabus has a clear set of competencies—identifying required subject matter mastery, contextual considerations, and practice-based skills—that students must demonstrate to successfully complete the course. In addition, program outcomes will be clearly outlined in Web site content, bulletins, and other program materials. Faculty will also review these requirements at the beginning of each course.

2. Describe how the means chosen for assessing student learning in this program are appropriate to the content, learning design, technologies, and characteristics of the learners.

Answer: The majority of courses are project-based so that students have the opportunity to demonstrate a more complete understanding of the material within the larger context of healthcare, and to demonstrate their technical competence in practice. This mode of assessment surpasses the fact-based measurements afforded by exams and quizzes.

III. PROGRAM EVALUATION

1. What process is in place to monitor and evaluate the effectiveness of the distance learning program on a regular basis?

Answer: SPS uses a two-part process for monitoring academic quality and tracking programmatic outcomes of its distance learning programs. The program's academic director will supervise ongoing operations on a semesterly basis and be responsible for addressing student concerns in all aspects of their enrollment. In addition, there will be a group of consortial faculty members and senior-level practitioners who will guide the program's content, quality of education, and student learning. The consortial faculty, along with industry professionals and adjuncts who teach in the program, will meet to evaluate individual student progress as well as macro-level program trends. The faculty will also help to set and refine an agenda for the year to come.
Secondly, the dean and associate deans will (and do) take a proactive role in understanding student success and satisfaction for all programs. The School's senior leadership, academic directors, and senior staff at SPS regularly review student progress and retention metrics throughout the semester.

Redundant evaluation processes ensure the highest quality education for our students.

2. How will the evaluation results will be used for continuous program improvement?

**Answer:** Each year, the School of Professional Studies conducts a strategic planning process, tied to the University-wide Performance Management Process (PMP), where administrative and academic directors come together to discuss the successes and challenges of the previous year and to set a course for the next. By combining the perspectives of those who teach and others who provide critical administrative support, the School is better able to create holistic solutions for the problems that students face. By bringing together representatives from across all programs, the School is sure to develop inclusive responses that better serve everyone.

During the planning process, evidence provides the backbone for future action; pass rates, retention and graduation statistics, student survey results, and a breadth of operational performance metrics will guide the planning process and future resource investments. Yet with all of the numbers, we never lose sight of student stories. These narratives add meaning to metrics.

3. How will the evaluation process assure that the program results in learning outcomes that are appropriate to the rigor and breadth of the college degree or certificate awarded?

**Answer:** The evaluation process includes an “academic review” each term, attended by the academic director and consortial faculty as well as any teaching faculty who wish, to meet and discuss each student’s performance. This type of qualitative data provides in-depth information about students’ competency acquisition, beyond simple alpha-numeric grades. It also gives faculty the information they need to guide students in upcoming courses.
APPENDIX XI –EXTERNAL EVALUATION REPORTS
April 11, 2010

To Whom It May Concern,

Please find attached my review of the proposal for the Masters Program on Information Systems for Urban Sustainability.

Please feel free to contact me, should you have any questions.

Yours faithfully,

Prof. Edwin van Leeuwen
Review of the Proposal for the Masters Program on Information Systems for Urban Sustainability

Overall Assessment

The proposed coursework is impressive in scope and goals, fulfilling an emerging need in our society. In this sense, the project is visionary. In addition, and keeping with the reality of our times, the program will be developed at the outset for appropriate online delivery, which strengthens its potential for success. With it, CUNY will be placed as the pioneer institution to acknowledge and address this growing area of expertise. Today, “sustainability” is often defined in an ad-hoc manner, and at the workplace, it may mean different things to different people. The proposed program deeply integrates urban development courses providing important knowledge in computer science, engineering, business, mathematical modeling and statistics. There is enormous value added in the program; rarely would a student be exposed to the various disciplines proposed here, which aid in decision making for urban development. Furthermore, the students will have the opportunity to learn from the most respected researchers, teachers and practitioners in their areas. The proposal is well articulated, and although the program is ambitious, the team of faculty members is well capable of delivering results of the highest quality.

During the years, I have traveled to strategic countries looking for academic excellence and expertise that could contribute to the development of techniques and operations in the mining industry. In my professional experience, bright minds are everywhere, but in the last decades, emphasis on specific indicators of performance has influenced how we shape the curricula that students actually follow in the so-called “Western” countries. Students often narrow their expertise to the one or two areas of study where they excel, in order to increase their marks and thus, their chances for funding. But they forsake the study of knowledge in parallel streams, particularly mathematics and statistics. The current program integrates fundamental knowledge, which is today hard to find in one person. The need for such academic profile is well illustrated by the list of current job positions that would be ideally suited to the graduates of this Masters program. I was particularly well impressed with the balance between fundamental topics and applications in real case studies. Again, “integration” is the word that comes to mind when reading the proposal document.

Purpose, Goals and Need

The program targets students that are information system specialists, who wish to refine their knowledge in very practical terms, in order to work in the public and private sectors of society dealing with urban sustainability issues, a very timely goal. The curriculum is therefore developed as a terminal program rather than a research degree. The target student demographics has been clearly identified, and the document shows thorough understanding of the demand for this program. At the forefront, the students will acquire very valuable skills in programming, mathematical modeling, simulation and statistical analysis. At the same time, they will integrate essential knowledge in business planning, engineering and geography to understand and study the development of cities in terms of the complex subsystems that interact, both in public services and in population dynamics. The need for such background knowledge is growing, and initiatives around worldwide to promote a greener view to the manner in which we create new cities and in which we live in them. This Masters is futuristic in its view, addressing an emerging need and pulling resources from diverse and relatively new academic subjects. Indeed, the proposal aims at creating IT professionals with a sophisticated background, well trained to understand the societal challenges that sustainable development imposes. While the program mentions in particular the urban development in New York City, I believe that graduates will be placed in a particularly good place to perform well worldwide. The advantage of providing the program in New York is, of course, two-fold. First, NYC will benefit from the program at large, through the training of highly...
qualified personnel that will soon join the workforce and will have an impact on decision-making policies. Second, the program will benefit from the endless activities, public lectures and opportunities that occur in the area. The developers of this Master’s program have carefully sought appropriate support from industries that have already started the trend for “greener” operation. There is no doubt in my mind that the need for the program is strong, and that it cannot decrease in a world where IT interconnections are shaping a new society. Individual devices and communications and global monitoring through sensor networks will inevitably lead to a new form of integrated management and control. IT specialists today lack the specific knowledge that this program will provide for them to contribute towards sustainable development of this new society.

The document identifies the student population that is most likely to constitute the demand for this program. In so doing, it explains the demographics of the likely participants as students who may be working part time and who have a definite academic profile. In accordance, the proposed program will be developed to adjust to the requirements of such students, by doing the courses online and including case studies and realistic projects in every course. The emphasis is always in the integration of practical knowledge and theoretical understanding. Their approach to recruitment is also well adapted and it is likely to succeed in reaching out to the community to maximize the recruitment of excellent students.

Curriculum and Faculty

The design of the program is solid and focused on the target population of potential students. Under the current proposal, a student with the appropriate profile can graduate within a year, following a well-structured plan. Students who do not have the requirements in computer science, for example, will be able to follow the online courses after necessary preliminary courses, which the SPS has already foreseen.

The three-semester coursework is excellent in balance of material and integration of knowledge necessary for the students to learn the fundamental aspects of IT for urban sustainability. The Faculty is of the highest quality and expertise in their various fields, ranging from Geography to mathematics, business, statistics and computer science. Of paramount importance are the facts that courses will emphasize case studies, thus balancing theoretical, modeling and programming skills. This is in contrast to many other academic programs. The capstone course provides the students the opportunity to achieve the integration of the diverse topics that they have learnt, towards projects that are of personal interest to them. This is a greatly motivating pedagogical method, and it is important that the developers of the program will draw from their joint experiences and contacts with researchers in the public and private sectors in the city of New York in order to define and carry out the projects. Working in teams will enhance the graduates’ skills for real life tasks in their chosen professional area.

I cannot stress too much my enthusiastic endorsement for this proposal, which I believe will likely put CUNY at the forefront of sustainability in New York City and beyond.

Sincerely,

Prof. Edwin van Leeuwen

Prof. Edwin van Leeuwen, FTSE
Director of Global Systems, Victoria
Melbourne Energy Institute
McCoy Building, School of Earth Sciences, University of Melbourne, Victoria 3010, Australia
Ph: +61 430 634 647

Proposal to Establish a Master of Science in Information Systems
CUNY School of Professional Studies
Approved by the School of Professional Studies Curriculum Committee, July 15, 2010
Approved by the School of Professional Studies Governing Council, September 10, 2010

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Facsimile: (212) 995-4122
chris.bregler@nyu.edu

April 11, 2010

John Mogulescu
Senior University Dean for Academic Affairs and
Dean of the School of Professional Studies
535 East 80th Street
NY, NY 10021

Re: Master of Science in Information Systems

Dear Dean Mogulescu:

Thank you for the opportunity to review the proposed Master of Science in Information Systems at the City University of New York, School of Professional Studies. Enclosed please find my assessment of the program according to the following criteria: overall purpose and goals; need; curriculum; faculty; and institutional resources/facilities.

Sincerely,
Christoph Bregler
Associate Professor, Computer Science
Evaluation Report

Institution: CUNY School of Professional Studies

Evaluator Name and Title: Christoph Bregler, Associate Professor of Computer Science

Program Title: Information Systems

Degree: Master of Science

Date of Evaluation: April 9, 2010

II. Overall Purpose and Goals
The goals of this new degree are two-fold. First the program addresses the continued and indeed growing demand for information system professionals by providing a general IS curriculum that takes a broad view in the definition of systems, information, analytics, and simulation, but also offers a great deal of flexibility in the electives so that students can adapt their coursework towards personal interests. The other aim of the degree is to prepare a second group of graduates with the very much needed skills and a new mind-set for the drastically changing landscape and challenges in urban areas regarding broad issues such as sustainable urban development, environmental impact, public health, transportation, climate, waste, and other resource management. One of the core tools to effectively put this new agenda in place is information systems. Without the understanding of both complex systems-of-systems and information systems, it is impossible to pursue this new direction.

III. Need
Nearly a decade past the bursting of the Internet bubble, demand for information systems professional has stabilized and now is beginning to grow. This program is unique because of its core requirement for all students to take a systems approach to problem solving. Moreover, the strong math requirements will be beneficial to graduates in a multitude of career paths.

For the track in sustainability, there is no single program in place that would sufficiently address all core issues for Urban Sustainability and Information Systems. A student could take a computer science degree but would miss essential other disciplines related to this focus and would also be constrained to take computer science credits that are less relevant to this broad agenda. The fact that Mayor Bloomberg of NYC instantiated a major and high-profile initiative (the PLANNYC 2030, which is at the heart of this program), as well as the fact that many other major cities in the US and worldwide are shifting focus to plan and act in a more sustainable fashion, make the existence of such a program even more important. Besides city governments, UN programs and every government in the world have given this agenda high priority. Furthermore, large corporations, including IBM, which has a standing relationship with CUNY and NYC, are also making Information Science and Sustainability their highest priority (IBM’s Smarter Planet Program and IBM’s smarter City Program).

CUNY is perfectly positioned to instigate such a program, as one of the major universities in one of the most important cities in the world. The cost structure alone makes access ubiquitous.

IV. Curriculum
I reviewed the curriculum, and it is a very well balanced program with requirements that establish a solid base in the core areas, such as relevant computer science, engineering and mathematical foundations, and project management skills background. The requirement to pass foundation courses is essential for a solid degree, and the further requirement to choose an elective with a final capstone course gives the graduates a very good starting point to join the public and private sector with a broad and deep background. The general IS track is flexible allowing students to tailor their studies. The urban sustainability track is robust and addresses several of the most pressing problems in the field, e.g., energy and transportation.

V. Faculty
CUNY has a very strong mix of faculty with different backgrounds that fit this new program. The CUNY Graduate Center in Computer Science has an excellent group of faculty with a first tier reputation in many relevant research areas. The CUNY Institute of Urban Systems and the famous Transportation Research Center are also top notch. I can only comment on the research reputation of these faculty, which is internationally at the top level, and I assume that the teaching quality is high as well.

VI. Institutional Resources/Facilities
As I mentioned earlier, several centers at CUNY are right at the heart of this agenda. The CUNY Graduate Center, for example, is as superbly managed graduate program in the heart of Manhattan with very good facilities and resources. I have visited this center many times, and I am always impressed. Furthermore the Transportation Center has an excellent reputation and is the perfect resource for this new program. The CUNY Institute of Sustainable Cities is also on board and could not be a better match for this new program. I also know through a new collaboration between CUNY, IBM, Columbia, and NYU, that CUNY is very well connected to other universities in the city and other companies that have a high impact on this new field.

VII. Other Comments
I'm looking forward to the inauguration of this program. I'm sure it will make CUNY, New York City, and New York State a more attractive and more competitive place, and will attract many students. I could imagine that the quality and reputation can be very high in a very short time, since this program is being proposed at the right time and in the right place.
John Mogulescu
Senior University Dean for Academic Affairs and
Dean of the School of Professional Studies
535 East 80th Street
NY, NY 10021

March 1st, 2011

Re: Master of Science in Information Systems

Dear Dean Mogulescu:

Attached please find my review of the proposed master's degree in information systems. If you have any questions or need additional information, please let me know.

Sincerely,

Boleslaw K. Szymanski
Claire and Roland Schmitt Distinguished Professor of Computer Science
Director of the Social Cognitive Network Academic Research Center
Rensselaer Polytechnic Institute
Computer Science Department
335 MRC
110 8th Street
Troy, NY 12180
This evaluation is based on the program and course descriptions provided by the authors.

1. Program
   a. Perceived purpose, structure, and requirements, administration and monitoring.
      The claimed purpose of the new degree is to provide both a general information system
degree and a track in information systems for urban sustainability. The curriculum is
divided into two groupings: eight core courses required for both groups of students and
four electives that comprise the track. The two-tier structure is intended to allow the
addition of several new tracks in the future.

      The core requires students to take a combination of IS related courses including a
systems course, two math courses, a simulation course and two research project
courses. In addition, students are required to take an often overlooked and much
needed project management course. The track lets students choose four of several
potential electives.

      Although four track courses seem limiting, the fact that the two research project
courses in the core are on a topic of the student's choosing ensures should provide
sufficient flexibility for a student to develop depth in a particular specialization.

      The program will be supervised by a half-time academic director and additional faculty
who are appointed on a consortial basis. This arrangement balances the need for light
management with flexibility of matching students and faculty interests. The proposal
provides clear guidelines and criteria for the effective administrators to monitor student
success.

   b. Special focus and expectations for continued development and self-assessment

   c.

      The program's initial specialization in information systems for urban sustainability is an
important and relevant focus. The program foresees an increase of the number of
tracks as it matures. Specifically, proposal mentions health information systems and
business intelligence. It appears that the currently proposed core courses will support
this type of analytic specialization.

   d. Support

      The proposal references a number of academic and student support services already
available at the School of Professional Studies that have been in operation for the last
five years. From my personal involvement with research at the School, I know that it has
experience with graduate students both online and in person. The program will benefit
from the development of a strong information systems teaching platform to ensure that
students will have sufficient opportunity to write code and run simulations. In addition,
it will be important for students to have face to face time with faculty advisors.
2. Faculty
   a. Experience and research
      From my limited interaction with faculty researchers and from the CVs of the faculty
      involved in the proposed programs, it is clear that the faculty who developed the
      program have a solid reputation as researchers and a great deal of teaching experience.
      Many are leaders in their fields having published in high-quality journals. The vast
      majority have earned doctorates from leading universities. Others have extremely
      valuable experience in practice. This combination of skillsets will benefit students,
      especially those who intend to remain in the workforce.
   b. Size
      Nine full-time and part-time faculty have been identified to teach and/or administer the
      program. In addition, there are two consortial positions that are yet to be filled. This is a
      sufficiently large number of people to ensure the initial program’s success.
   c. Qualifications and involvement of adjuncts
      There are three adjuncts named, two with a relevant doctorate from a leading research
      institution and another with over 30 years of practice experience. There are ten
      additional adjunct positions to be identified; all requiring a PhD or sufficient professional
      experience. This suggests that the program will be taught half by full-time faculty and
      half by adjuncts. This is proper, typical and reasonable balance for this kind of a
      graduate program.

3. Resources
   a. Adequacy of physical resources and facilities
      The proposal identifies a long list of the typical kinds of resources and support
      structures that one expects at a respected university, whether the program is online or
      in person. The number and type of positions seems acceptable for a program of
      between 50-150 students. I assume that the budget allocation is sufficient within
      CUNY’s cost structure.

4. Summary Comments and Additional Observations
   a. Strengths and weaknesses in terms of objectives and feasibility
      The program offers students a particularly interesting IS curriculum that favors complex
      systems, modeling, and simulation, but still one that can be generalized or specialized
      through clever use of electives. Students who choose the general route can currently
      take advantage of several special topics courses, e.g., in databases and systems. Others
who want to specialize in fields such as sustainability can do so as well with what looks to be a highly-integrated and seamless curriculum. Having a two semester project-based research course, and a project management course, will make certain that students leave with job skills.

The program has a large group of full-time faculty participation, more so that at many smaller schools. Their involvement with curriculum and students is essential for long-term success. I was also impressed by the involvement and commitment of companies such as IBM in the curriculum planning and future program activities. This too will ground students in real-life practices and offer the best possible career opportunities. Finally, it will be important the faculty take a role in developing internships and connections to practice. So much cutting-edge work is happening in IS. With expert faculty helping to make critical connections, your students can be a part of great things to come.
APPENDIX XII –LETTERS OF SUPPORT
February 25, 2011

John Mogulescu
Senior University Dean for Academic Affairs and
Dean of the School of Professional Studies
535 East 80th Street
New York, NY 10021

Dear Dean Mogulescu:

I am pleased to write this letter in support of the City University of New York’s (CUNY) proposal to develop a new online Master of Science in Information Systems at the School of Professional Studies with a track in sustainability, one of the hottest growing fields. A hallmark of this degree is that even students who do not opt for the sustainability track will also be exposed to modeling techniques. This is a valuable addition and sets this degree apart from other IS degrees. I applaud the careful thought that went into the structure and content of the degree. With data becoming ever more plentiful and systems to manage that data becoming increasingly complex and interconnected, it is critical that we train members of the workforce in the skills needed to build and manage these large and complex systems.

As Founder and CEO of Blue Badge Insights, I know this firsthand. I am a tech strategist, analyst, columnist and blogger and I also serve as CTO for a NYC-based consulting firm. I have specific expertise in database and business intelligence (BI) technology and know full well how difficult it can be to procure qualified BI/analytics professionals.

As a life-long New Yorker I also know full well how the greening of buildings, transit and the energy delivery grid in this city is both necessary and difficult to achieve, given the retrofit requirements. As such, I am especially interested in the track on urban sustainability. Having individuals who can develop and manage the technology systems and infrastructures related to urban systems like energy and transportation will be critically important as we try to address issues of climate change and long-term sustainability.

This degree will have a positive impact on companies and organizations in the New York City area. Best of luck with the proposal.

Sincerely,

Andrew J. Brust
Founder and CEO, Blue Badge Insights, Inc.
International Business Machines Corporation

February 25, 2011

John Mogulescu
Senior University Dean for Academic Affairs and
Dean of the School of Professional Studies
535 East 80th Street
NY, NY 10021

Dear Dean Mogulescu:

I am pleased to write this letter in support of the City University of New York’s (CUNY) proposal to develop a new online Master of Science in Information Systems at the School of Professional Studies with a track in sustainability, one of the hottest growing fields. A hallmark of this degree is that even students who do not opt for the sustainability track will also be exposed to modeling techniques. This is a valuable addition and sets this degree apart from other IS degrees. I applaud the careful thought that went into the structure and content of the degree. With data becoming ever more plentiful and systems to manage that data becoming increasingly complex and interconnected, it is critical that members of the workforce are trained in the skills needed to build and manage these large and complex systems.

As the Senior Manager, Industry Solutions and Emerging Business, for Smarter Buildings Research at IBM T. J. Watson Research Center, I see evidence of cities, municipalities, and building owners and operators continuously seeking efficiency, sustainability, energy performance, greenhouse gas reductions, and cost-effectiveness for their portfolios of buildings. For example, CUNY and IBM Research are collaborating to develop a new first-of-a-kind analytics software system to track, forecast, simulate, and optimize energy consumption in buildings. The project will provide valuable information and skills to help facility staff and property managers achieve significant energy and cost savings. The new system uses the latest modeling techniques in physics, mathematics, and statistics and recent advances in computational power and computer science.

This week NYU’s School of Continuing Education and Professional Studies hosted the 1st Annual Conference on Sustainable Real Estate: Building the Smart City, Removing Barriers, Fostering Innovation” with over 200 academic, industrial and government attendees including two panelists from IBM. I served as a judge for the 1st Annual Sustainable Real Estate Development Competition, open to graduate students across the United States to develop innovative models of sustainable real estate development and redevelopment while working together with other graduate students from a range of disciplines. Cross-disciplinary teams nationwide (e.g. Michigan, New York, Pennsylvania, Texas) developed very high quality and comprehensive proposals to
address environmental, technological, financial, social, and replicability factors while competing for $40,000 in prize money.

- Conference: http://www.scps.nyu.edu/areas-of-study/real-estate/news-events/conference-on-sustainable-real-estate.html
- Graduate Student Competition http://www.scps.nyu.edu/sbe/outreach-events/graduate-student-competition/

I am especially interested in the track on urban sustainability in CUNY’s new online Master of Science in Information Systems. Having individuals who can develop and manage the technology systems and infrastructures related to urban systems like energy, transportation, water, communication and education will be critically important in addressing issues of climate change, long-term sustainability, and enabling cities to manage their resources effectively.

This degree will have a positive impact on companies and organizations in the New York City area and beyond.

Sincerely,

Jane L. Snowdon, Ph.D.
Senior Manager, Industry Solutions and Emerging Business
Smarter Building Research
February 27, 2011

John Mogulescu  
Senior University Dean for Academic Affairs and  
Dean of the School of Professional Studies  
The City University of New York  
535 East 80th Street  
New York, NY 10021

Re: Proposed online Master of Science in Information Systems

Dear Dean Mogulescu:

I write to you in support of the City University of New York’s (CUNY) proposal to develop a new online Master of Science in Information Systems at the School of Professional Studies with a track in sustainability. This is a growing area of knowledge which is rapidly coming into its own as an acknowledged field for study and employment. As I understand it, a hallmark of this proposed degree is that even students who do not opt for its sustainability track will also be exposed to modeling techniques, a valuable addition which would set this degree apart from other IS degrees. I endorse the careful thought that went into the structure and content of this degree. With data becoming ever more plentiful and systems to manage that data becoming increasingly complex and interconnected, it is critical that members of the workforce receive education and training in the skills needed to build and manage such large and complex systems.

As Senior Advisor of the Alternative Energy & Clean Technology team at New York investment banking firm Avalon Group, Ltd., I know this firsthand, as I have spent over 20 years helping advise and finance enterprises and projects that count sustainability as one of their key drivers. The more knowledgeable and skillful use of modeling expertise, whether related to support for banking diligence activities or business operations, would be of additive value to the companies I deal with around the world.

I find the track on urban sustainability to be particularly appealing, on a personal level (as a city-dweller, first in New York and now in Prague). Having individuals who can develop and manage the technology systems and
infrastructures related to urban systems like energy and transportation is of critical importance as we try to address issues of climate change, adaptability and long-term sustainability.

Having spoken extensively with Dr. Ted Brown, I am convinced that this proposed degree would have a positive impact on the ability of companies and organizations in the New York City area to become increasingly competitive as regards their sustainability-related performance.

I wish you the best of luck with CUNY's proposal.

Very truly yours,

Ira S. Rubenstein
Senior Advisor
Alternative Energy & Clean Technology

Avalon Group, Ltd.
1375 Broadway 6th Floor
New York, NY 10018
Main: 212-764-5610
Desk: 212-624-9291
Cell: 646-863-9676
Fax: 212-764-6013
irubenstein@avalongroupltd.com
www.avalongroupltd.com
February 28, 2011

John Mogulescu
Senior University Dean for Academic Affairs and
Dean of the School of Professional Studies
535 East 80th Street
New York, NY 10021

Dear Dean Mogulescu,

Please accept this letter as my endorsement of the City University of New York’s (CUNY) proposal to develop a new online Master of Science in Information Systems at the School of Professional Studies with a track in sustainability. As I’m sure you’re well aware, the matriculation rate for computer science, information systems and other related disciplines has been on the decline in recent years.

The New York Technology Council’s mission is to help support and grow the technology community in New York. We work with companies, local government and academic institutions to achieve our goals. I believe the uniqueness of the proposed program’s sustainability track will draw a high caliber of student to the program and will also endow graduates with the skills needed to succeed in their chosen fields. These dynamics will have a positive impact on the technology community in the City and will bring much-needed enthusiasm and talent to the area.

Should you have any questions about the Council or our ongoing role in supporting the New York technology community, please do not hesitate to contact us.

Sincerely,

[Signature]

Donn Morrill
Executive Director
New York Technology Council
February 24, 2011

John Mogulescu
Senior University Dean for Academic Affairs and
Dean of the School of Professional Studies
535 East 80th Street
NY, NY 10021

Dear Dean Mogulescu,

I am pleased to write this letter in support of the City University of New York's (CUNY) proposal to develop a new online Master of Science in Information Systems at the School of Professional Studies with a track in sustainability, one of the hottest growing fields. A hallmark of this degree is that even students who do not opt for the sustainability track will also be exposed to modeling techniques. This is a valuable addition and sets this degree apart from other IS degrees. I applaud the careful thought that went into the structure and content of the degree. With data becoming ever more plentiful and systems to manage that data becoming increasingly complex and interconnected, it is critical that we train members of the workforce in the skills needed to build and manage these large and complex systems.

As the Assistant Director of Commercial Building Services of Steven Winter Associates, Inc. I know firsthand how energy management, sustainability and information systems work are critical to successful efficiency programs. Our organization is utilizing energy modeling software, building automation software, data management protocols and various forms of instrumentation to inform our client projects. Having a skilled workforce to develop and utilize all of these tools to ensure success and operational savings is imperative to the success of the sustainability movement.

This degree will have a positive impact on companies and organizations in the New York City area. Please let me know how I can be of further service in this effort. Best of luck with the proposal.

Sincerely,

Lauren Brust
(212) 564-5800 x101
March 2, 2011

John Mogulescu
Senior University Dean for Academic Affairs and
Dean of the School of Professional Studies
City University of New York
535 East 80th Street
New York, NY 10021

Dear Dean Mogulescu,

I’m writing to express my support for the proposed program at the School of Professional Studies leading to an M.S. in Information Systems. The proposal effectively describes how the demand for highly-skilled information systems graduates continues to grow in New York City and beyond. It also demonstrates well how the on-line program proposed would complement the programs already in existence.

I particularly appreciate a focus of the program on Modeling and Simulation. In a business environment that has been referred to as “data rich, but information poor”, it is important to provide graduate students with the tools and techniques that would allow them to organize relevant data and identify the key components of a complex system or situation to accurately represent (and possibly anticipate) its behavior. People with such skills find rewarding careers in a wide variety of industries including finance, power delivery, telecommunications, and transportation—all quite important to our local and global economy. Being able to effectively analyze the interactions of the parts within a system over a long time horizon is vital to the study of Urban Sustainability, a field that is expected to grow quite quickly in the near future. Graduates from the proposed program should help to satisfy the expected demand for skilled analysts, programmers, project managers and engineers that will arise in this arena.

Should you need any assistance in bringing the proposed program to fruition, please do not hesitate to contact me.

Sincerely,

[Signature]

Dr. Steven Cosares
Associate Professor, Dept of Business and Technology
CUNY LaGuardia Community College
APPENDIX XIII – FACULTY CURRICULUM VITAE

This section contains the first two pages of the Curriculum Vitae for the following faculty:

- Bojan Angelov
- Christoph Bregler
- Michael Bobker
- Theodore Brown
- Louis A. D’Alotto
- Barbara H. Edington
- Linda Weiser Friedman
- Nancy D. Griffeth
- Camille N. Kamga
- Ahmet Mete Kök
- Hervé Queneau
- Paul Russo
- William Duncan Solecki
- Boleslaw K. Szymanski
- Abdullah Uz Tansel
- Edwin H. Van Leeuwen
- Felisa J. Vázquez-Abad
KEYWORDS

- Service, design, creativity, capabilities, technology, engineering, innovation, experience, value, impact.

WORK EXPERIENCE

Research Fellow
Department of Technology Management, Polytechnic Institute of NYU, Brooklyn, NY
9/2004 – 7/2010

- Selection and development of case studies, market analysis and modeling, preparing proposals for research grants, and teaching. Research on service design and organizational capabilities, innovation models and strategy, experience design, managing emerging and pervasive technologies, disruptive technologies, etc.
- Worked on several projects with the Department Chair including the proposal for a new MBA Program, the establishment of a service innovation research center, etc. Handled corporate recruitment for the Executive Master’s Degree Programs during the summer of 2007.

Lecturer
Department of Technology Management, Polytechnic Institute of NYU, Brooklyn, NY

- Courses developed and taught in the undergraduate Business and Technology Management program: Management Strategy for the Technology Sectors; Innovation Management.

Research Assistant
President’s Office, Polytechnic University, Brooklyn, NY

- Research Assistant to the President of the University. Prepared business proposals, reports, presentations, and research papers. Worked closely on strategic initiatives such as the Urban Sustainability Initiative and the Brooklyn Navy Yard Media Research Center.
- Member of several committees including the Provost Search committee, the committee for reform of the Undergraduate Experience and Curriculum, and the advisory council for the Poly-NYU merger.

Visiting Researcher
The Levin Institute, New York, NY
7 – 12/2005

- Econometric modeling; involved in the Global Talent Pool project (focusing on the Chinese talent pool in science and engineering).

Research Fellow
Department of Electrical Engineering, Polytechnic University, Brooklyn, NY

- Research on propagation in wireless communications. Involved in an externally funded research project on wireless location positioning.

EDUCATION

Ph.D. in Technology Management 2010
- Polytechnic Institute of New York University, Brooklyn, NY
- Service Design Capability – Towards a Service-based View of the Firm

Master of Science in Management 2006
- Polytechnic University, Brooklyn, NY
- Management of Disruptive Technologies

Master of Science in Electrical Engineering 2004
- Polytechnic University, Brooklyn, NY
- Mobile Terminal Positioning Using Ray Tracing Techniques

Bachelor of Science in Electrical Engineering 2002
- “St. Cyril and Methodius” University, Republic of Macedonia
- Mobile VoIP Link Simulation

INTERESTS AND ACTIVITIES

- Ski instructor for the Adaptive Sports Foundation (Windham, NY)
- Central Park Dance Skaters Association (New York, NY)
Christoph Bregler

NYU Courant Institute
719 Broadway, 12th floor
New York, NY 10003

chris.bregler@nyu.edu
http://cims.nyu.edu/~bregler
+1-212-998-3208

EDUCATION

University of California, Berkeley, CA, 09/93 – 05/98
Ph.D. in Computer Science, 1998, M.S., 1995
Thesis: Computational Models of Human Motion
Advisors: Jerome A. Feldman, Jitendra Malik

University of Karlsruhe, Germany, 10/87 – 09/93
Diplom in Computer Science, 1983
Thesis: Computer Lipreading
Advisor: Alex Waibel

PROFESSIONAL EMPLOYMENT

New York University, Computer Science Dept., Courant Institute, New York, 09/04 – present
Associate Professor (tenured): Vision, Graphics, Motion-Capture, Learning, and New Media.

Lucasfilm, Industrial Light & Magic, San Francisco, 08/07 – present
Consultant

Various other short-term consulting arrangements: Expert-Witness, IP Evaluation, Project Planning, etc. (ongoing)

New York University, Computer Science Dept., Courant Institute, New York, 09/02 – 08/04
Assistant Professor: Vision, Graphics, Motion-Capture, Learning, and New Media.

Stanford University, Computer Science Department, CA, 01/99 – 08/02
Assistant Professor: Vision, Graphics, Learning.

Disney Feature Animation, Burbank, CA, 2001 + 2002
Consultant: Vision Based Motion Capture for Gemini Project (Facial Animation)
In Lance William’s Group.

New York University, Courant Institute/Media Research Lab, New York, 08/98 – 01/99
Visiting Scholar: Research on Vision and Animation,
In Ken Perlin’s/ Davi Geiger’s group.

Interval Research Corp., Palo Alto, CA, 05/95 – 10/97
Consultant: Developed Facial Animation System: Video Rewrite
In Malcolm Slaney’s and Michele Covell’s group

University of California, Berkeley, Computer Science Dep. and ICSI, 01/93 – 07/98
Research Assistant: Statistical Learning, Visual-Acoustic Speech Recognition,
Object Recognition, Human Body Tracking/Animation
In Stephen Omohundro’s, Jerry Feldman’s, Nelson Morgan’s, and Jitendra Malik’s Group.

Hewlett-Packard Laboratories, Palo Alto, CA, 09/91-03/92
Software Engineer. Developed System Software for Physician’s Workstation Project
In Paul Tang’s group.

San Francisco State University, San Francisco, CA, 04/91-03/92
Visiting Scholar: Research on Neural Networks. In Gerald Eisman’s group.

Hewlett-Packard, Research and Development, Waldbronn, Germany, 10/90-04/01
Part-time Software engineer, Firmware development for HP’s Liquid Chromatography system.

Memorex-Telex PC Division, Milpitas, CA, 07/90-10/90
Intern. Hardware testing, marketing research.

Fraunhofer Institute, FhG, Karlsruhe, Germany, 10/88-7/90
Research Assistant: Implemented Human Body tracking system.
In Prof. Nagel’s and Karl Rohr’s group.

IBM Research and Development, Boeblingen, Germany, 07/89-10/99
Intern. Software tools development.

IBM Development Lab, Sindelfingen, Germany, 07/88-10/88
Intern. Software tools development.

HONORS

- IEEE 2008 Longuet-Higgins Prize (for Fundamental Contributions in Computer Vision
  that Have Withstood the Test of Time)
- Finalist, Blavatnik Award 2007 (New York Academy of Science)
- Reese Prosser Memorial Lecture 2005 (Dartmouth)
- Motion Capture Society World Records: Squidball: Most Interactive Capture (Incumbent),
  Largest Markers (Incumbent), Largest Capture (2004)
- Program Chair, SIGGRAPH 2004, Computer Animation Festival & Electronic Theater
- Sloan Research Fellow, 2003, 2004
- Olympus Prize, 2002, (German Vision / AI Society DAGM honors every year 1
  outstanding scientist)
- I.E. Block Community Lecture, 50th Anniversary of SIAM community, 2002
- IEEE CVPR 2001 Best Student Paper (Co-Author / Advisor of student)
- Stanford Terman Fellow, 1999
- Stanford Joyce Faculty Fellow, 1999

OTHER PROFESSIONAL ACTIVITY

Editorial Boards:
- International Journal of Computer Vision (Kluwer)
- Graphical Models (Academic Press)
Experience and Expertise
Over twenty five years in energy engineering in the New York City region -- evaluation, application design, installation and operation of varied technologies such as cogeneration, lighting, and central plant equipment. Hands-on and supervisory experience in the testing, maintenance and repair of mechanical equipment and control systems. Extensive energy auditing including program development and management. Experienced with system retrofit design and specification. Practical knowledge of energy markets, project financing, and ESCO business operations. Staff development, building operator and energy auditor training, engineering management, and introduction of new technologies. Current focus on education and workforce development for enhanced building operations, including curriculum development and teaching. Research interests in building automation system--operator interface for usability, performance monitoring and energy data management.

Education and Certifications
Operations and Performance Management Professional, ASHRAE
Advanced Professional Certificate, Stern School of Business, New York University
Certified Energy Manager, Association of Energy Engineers
M.Sc. in Energy Management, New York Institute of Technology
M.A. Sociology and Anthropology, Oberlin College
B.A. Humanities, Oberlin College

Recent Projects and Publications
EnergyStar Portfolio Manager benchmarking supporting the NYC Dept of Education, applying student intern resources to the data management process for one of the largest public school systems in the world.
“Carbon Abatement Cost Curves for NYS” Residential-Commercial-Industrial sector team lead for a project conducted by the Center For Climate Solutions for NYSERDA 2008-09
“Decoding the Code” Sallan Foundation report (web-based publication) on the potential of impacts of building code revision on NYC energy use 2008
Training for NYC Building Operators, developed in conjunction with national Building Operator Certification program, NYC Dept of Citywide Administrative Services, and locals of the International Union of Operating Engineers
NYC Building Performance Consortium, a project of the CUNY Building Performance Lab, creating an on-going stakeholder dialogue within the commercial property industry
“Infrastructure Conundrums: Investment and Urban Sustainability” Technology and Society 28, 2006

Selected Experience
Building Performance Lab, CUNY Institute for Urban Systems, City University of New York
Founder and Director, 2006 - present
Established program and funding for development of enhanced building operating practices in NYC. Emphasis on training and workforce development, new curriculum, and university-industry collaboration. Funded by NYSERDA to support on-going technology transfer of retro-commissioning. Work includes development of new curriculum, training facilities, industry collaborations, and support of university energy management initiatives.

American Council for an Energy Efficient Economy (ACEEE)
NYC Market Consultant, 2002-2006
Engagement as one of two NYC-based principals for NYSERDA-funded project for introduction of “retro-commissioning” concepts, practices and demonstrations in the NYC commercial buildings sector. Presentations to owners, service providers, oversight of engineering scoping studies.

Association for Energy Affordability
Director of Strategic Planning, 2000-2006
Leadership role for the technical center of a network of community-based weatherization organizations on strategic new technologies and services for growth of services in the multifamily housing sector. Technical support to on-going energy audit and retrofit program. Training and training program development. Design and oversight of a “retail access” program for energy procurement. Development of wireless control technology for decentralized heating/cooling units, including demand-response, from concept through full-scale demonstration.

Goldman Copeland Associates, Consulting Engineers
Senior Project Manager, 1995-2000
Engineering and management for varied infrastructure upgrading for major public agencies. Studies, design, and turnkey construction. Direct management of engineering design and construction for over $25 million in NYC public school boiler plants (coal conversions). Call-in contract management for PA-NY/NJ MEDD for varied study and design projects.

EUA Cogenex
Senior Project Manager, 1994 – 1995
Design and project management of performance contracts for a major utility-owned ESCO, developed under a combination of shared-savings and standard-offer mechanisms. Energy audit analysis (performance and cost estimating), procurement, and field installation supervision.
BEI Energy Corporation  
Senior Vice President and Chief Operating Officer, 1984-1994  
Principal in charge of operations of a regional energy services company, $8-10 million annual budget in construction management and energy projects. Various program formats and forms of project finance. Energy audit programs and investment-grade audits, technology installations including micro-cogeneration, lighting, controls, and central plant optimization, construction management for housing rehabilitations. Responsible for staff development and management.

TecNica  
Volunteer, 1986 and 1987  
Short-term work assignments with the Ministry of Health, Hospital Maintenance division in evaluating boiler conditions, maintenance practices and priorities. Identified and addressed need for relay test equipment for improved troubleshooting and operational safety.

Brooklyn Energy Cooperative  
Energy Auditor 1981 - 1984  
Lead technician for a church-based energy organizing initiative. Performed energy audits of churches which were then used as the basis of educational presentations for clergy and parishioners. Supported non-profit retailing of energy conservation products and services.

Lieblich Mechanical Contractors  
Apprenticed myself to a major mechanical contractor specializing in boiler and burner installation and service. Initially hired to install automatic vent dampers that involved modification of burner control wiring. Performed various aspects of service operations.

Peoples Development Corporation, South Bronx NY  
Community Organizer, Energy Program Coordinator, 1977-1980  
Self-help housing and community development organization. Began work with participation in construction of a demonstration solar hot water installation as part of a sweat-equity, self-help housing rehabilitation. Initiated and conducted weatherization and boiler maintenance activities as part of local economic development programming.

Professional Activities  
Association of Energy Engineers, NYC Chapter, past President and active Board Member  
ASHRAE, member. Committee work:  
• Technical Resource Group 7: Tools for Sustainable Building Operations  
• Certification Sub-committee for Operations and Performance Management Professional  
New York Academy of Sciences, Chair, Environmental Science section

Languages  
English, Spanish

References  
Available upon request
Theodore Brown

Current Address:
The Graduate School and University Center of CUNY
Computer Science Department
365 Fifth Ave., Room 4319
New York, New York 10016
(212) 817-8191
tbrown@gc.cuny.edu

EDUCATION:

New York University, New York
PhD awarded 1971 in Operations Research and Industrial Engineering

New York University, New York
Masters of Science 1968 in Operations Research

City College of New York, New York
Bachelor’s Degree awarded 1966 in Mechanical Engineering

EMPLOYMENT:

Executive Officer, CUNY Ph.D. Program in Computer Science, Graduate Center, City University of New York (2000 to present)

Executive Director, CUNY Institute for Software Design and Development, City University of New York (2000 to present)

Professor, Computer Science Department, Queens College, City University of New York (1991 to present)

Chairman of Computer Science, Computer Science Department, Queens College, CUNY (1988 – 2000)

Associate Professor, Computer Science Department, Queens College, CUNY (1981-1991)

Assistant Professor, Computer Science Department, Queens College, CUNY (1971-1981)

Adjunct Associate Professor, Einstein College of Medicine (1982-1989)

Consultant, Operations Research, Chemical Bank (1967-1971)

Graduate Assistant, Operations Research Department, New York University (1966-1967)

Mechanical Engineer, General Electric Company (1965-1966)

SELECTED PUBLICATIONS:


**SERVICE:** (selected)

- **Chair of the Computer and Information Sciences Section**, The New York Academy of Sciences, 1998-2001
- **Chair**, Computer Science Discipline Council, CUNY, 1998-
- **Board**, New York Technology Council, 2009-
- **Executive Board**, New York Industry Software Association, 2001 to 2007

**PROFESSIONAL SOCIETIES:**

- Member, Informs
- Association for Computer Machinery
- IEEE Computer Society
LOUIS A. D'ALOTTO
5 Laurel Drive
Little Silver, New Jersey 07739
(732) 383-8076
voice mail: (718) 262-2541
e-mail: dalotto@york.cuny.edu

RESEARCH INTERESTS:

• Pattern Matching and String Processing
• Cellular Automata
• Image and Signal Processing
• Parallel Algorithms for Digital Signal Processing

EDUCATION:

Ph.D., Computer Science, 1993
City University of New York/Graduate Center, New York, New York
Dissertation title: The Kolmogorov Metric and a Classification of Linear Cellular Automata.

M.S., Mathematics, 1984
Stevens Institute of Technology, Hoboken, New Jersey

B.S., Mathematics, 1982
Saint John's University, Staten Island, New York

EMPLOYMENT HISTORY:

September 1997 YORK COLLEGE/THE CITY UNIVERSITY OF NEW YORK
To September 1994 ASSOCIATE PROFESSOR AND DEPARTMENT CHAIR (JULY 2005 – PRESENT)
Assistant Professor (Tenured 2001)/Department of Mathematics and Computer Studies

September 1994 To SAINT JOHN'S UNIVERSITY
August 1997 ASSISTANT PROFESSOR/DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

May 1996 NATIONAL EXCHANGE CARRIER ASSOCIATION (NECA)
To SEPTEMBER 1997 TELECOMMUNICATIONS NETWORK MODELING CONSULTANT - INTERPRET COST DISTRIBUTION MODELS FOR TELECOMMUNICATIONS NETWORKS; MAKE RECOMMENDATIONS ON WORKABILITY AND FEASIBILITY OF NETWORK COST MODELS.

September 1993 To LAFAYETTE COLLEGE
August 1994 VISITING ASSISTANT PROFESSOR/DEPARTMENT OF COMPUTER SCIENCE

September 1991 To CITY UNIVERSITY OF NEW YORK/COLLEGE OF STATEN ISLAND
August 1993 GRADUATE TEACHING ASSISTANT/DEPARTMENT OF COMPUTER SCIENCE

September 1990 To CITY UNIVERSITY OF NEW YORK/COLLEGE OF STATEN ISLAND
August 1991 SUBSTITUTE INSTRUCTOR/DEPARTMENT OF COMPUTER SCIENCE

Proposal to Establish a Master of Science in Information Systems
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Approved by the School of Professional Studies Governing Council, September 10, 2010

135
September 1985 To August 1990
CITY UNIVERSITY OF NEW YORK/BARUCH COLLEGE
Adjunct Lecturer/Department of Mathematics

September 1982 To June 1984
STEVENS INSTITUTE OF TECHNOLOGY
Graduate Teaching Assistant/Department of Mathematics

PAPERS (in print):


BOOK (in print):

Dr. Barbara H. Edington, PMP  
175 East 96th Street, Apt. 17 - O  
New York, NY 10128  
Home: 212-426-5151  
Office: 718-489-5348  
Babs.edington@yahoo.com

Education

**Project Management Certification, PMP since 2005**

**Doctorate of Professional Services in Computing, Computer Science & Information Systems**

**DPS in Computing - Pace University, 2005**
Research Areas: Contextual Factors, Conversion Effectiveness, Project Management
Dissertation: Contextual Factor Categories associated with Implementation Effectiveness

**M.B.A. - Masters in Business Administration with a Concentration in Finance 1991**
Temple University, PA

**B.S. (cum laude) - Psychobiology 1980**
Albright College, PA

Awards and Memberships:

Upsilon Pi Epsilon, Computer Science Honor Society (2005 - present)
Project Management Institute  
Board of Directors, New York Chapter, V.P. Marketing, NYC Chapter (2007 - present)  
Member of Corporate Outreach and Academic Outreach Committee  
Member of Women in Technology International (2007 - 2008)

Grants:

**PMI Educational Foundation** (2008), $5000, to fund materials for mentored Internship
**Faculty Development Grant** (2008) for instruction in AtRisk software
**Course Relief Grant** (Fall 2008) for development and research on experiential project management
**Course Relief Grant** (Spring 2007) for research on right-brain skills associated with holistic PM
**Faculty Development Grant** (June 2008) for instruction on grant proposal submission
**Faculty Research Grant** (2007) for research on project management collaborative skills
**Faculty Development Grant** (March 2006) to attend the MIT Conference on IT Agility

Courses Taught:

IT 1001  Computer Tools (Semester, interim and summer sessions)
IT 1101  Computer Based Information Systems
IT 2410  Web Design
IT 2510  Database Management
IT 2550  Medical Informatics
IT 2620  Business Applications
IT 3301  Project Management
IT 3101  Information Technology Law & Ethics
IT 3310  Systems Analysis
IT 3320  Advances Management of Information Systems
IT 4100  Special Topic – Mentored Project Management Internship Program
BIO Lab  Biology Lab Instructor
FIN 3301  Principles of Finance

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Written Works

Publications:

Peer-reviewed:


Academic and Trade Journals/ White Papers:


Edington, B., “IT Value management in Practice: Interviews with CIOs in Today’s Corporate Environment”, First Annual Combined Student/Faculty Research Day, May 7, 2004


1. EDUCATION

<table>
<thead>
<tr>
<th>Degree</th>
<th>Institution</th>
<th>Field</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>Polytechnic Institute of N.Y.</td>
<td>Operations Research</td>
<td>1983</td>
</tr>
<tr>
<td>M.S.</td>
<td>Polytechnic Institute of N.Y.</td>
<td>Applied Statistics</td>
<td>1980</td>
</tr>
<tr>
<td>B.A.</td>
<td>Baruch College, CUNY</td>
<td>Statistics/Biology</td>
<td>1976</td>
</tr>
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</table>

2. FULL-TIME ACADEMIC EXPERIENCE

<table>
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<tr>
<th>Institution</th>
<th>Rank</th>
<th>Field</th>
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<tbody>
<tr>
<td>Baruch College, CUNY</td>
<td>Professor</td>
<td>Statistics and Computer Information Systems</td>
<td>1/93-present</td>
</tr>
<tr>
<td>Baruch College, CUNY</td>
<td>Department Chair</td>
<td>Statistics and Computer Information Systems</td>
<td>9/93-6/98</td>
</tr>
<tr>
<td>Baruch College, CUNY</td>
<td>Associate Prof.</td>
<td>Statistics and Computer Information Systems</td>
<td>1/87-12/93</td>
</tr>
<tr>
<td>Baruch College, CUNY</td>
<td>Assistant Prof.</td>
<td>Statistics and Computer Information Systems</td>
<td>9/83-12/86</td>
</tr>
<tr>
<td>Baruch College, CUNY</td>
<td>Instructor</td>
<td>Statistics and Computer Information Systems</td>
<td>9/81-8/83</td>
</tr>
<tr>
<td>Long Island University Brooklyn Center</td>
<td>Assistant Prof.</td>
<td>Integrated Information Systems</td>
<td>1/80-8/81</td>
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3. PART-TIME ACADEMIC EXPERIENCE

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<tr>
<td>Polytechnic Institute of N.Y.</td>
<td>Adjunct Lecturer</td>
<td>Computer Science &amp; Operations Research</td>
<td>6/78-1/80</td>
</tr>
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</table>

4. NON ACADEMIC EXPERIENCE

<table>
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<tr>
<th>Place of Employment</th>
<th>Title</th>
<th>Dates</th>
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<tbody>
<tr>
<td>McLeod Ostrich Ranch</td>
<td>Statistical consulting</td>
<td>1994</td>
</tr>
</tbody>
</table>
Large regional window wholesaler  Marketing consulting  1985
   Helped develop advertising and direct mail campaign.

Kean College, Department of Economics and Management Science 1984, 1985
Helped to develop questionnaire for determining the feasibility of a new MS program in decision support systems. Helped to develop a new course in computer applications in business.

Private elementary school in Brooklyn, New York.  1984, 1985
   Helped to develop advertising and public relations.

Department of Transportation Planning & Engineering  Part-time Programmer  9/77-6/78
Polytechnic Institute of N.Y.

5. EMPLOYMENT RECORD AT BARUCH

<table>
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<tr>
<th>Rank</th>
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<tbody>
<tr>
<td>Professor</td>
<td>1/01/93</td>
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<tr>
<td>Associate Professor</td>
<td>1/01/87</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>9/01/83</td>
</tr>
<tr>
<td>Instructor</td>
<td>9/01/81</td>
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</table>

6. PUBLICATIONS IN FIELD OF EXPERTISE

A. Books:


B. Papers in Professional Journals:

(1) Articles (Refereed):


Biographical Sketch for Nancy D. Griffeth

A. PROFESSIONAL PREPARATION:
   M.S., Mathematics, Michigan State University, 1971.
   M.S., Information Science, University of Chicago, 1972.

B. APPOINTMENTS:
   Member, Doctoral Faculty, Department of Computer Science, Graduate Center, City University of New York (September 2003 to present).
   Professor, Department of Mathematics and Computer Science, Lehman College, City University of New York (September 2003 to present).
   Member of Technical Staff, Lucent Bell Laboratories (Next Generation Networking and Database Systems Research) (September 1997 to August 2003).
   Member of Technical Staff, Bellcore Applied Research, (September 1988 to August 1997).
   Visiting Associate Professor, Department of Computer Science, Princeton University (September 1987 to August 1988).
   Associate Professor, School of Information and Computer Science, Georgia Institute of Technology (September 1985 to August 1988).
   Assistant Professor, School of Information and Computer Science, Georgia Institute of Technology (September 1979 to August 1985).
   Assistant Professor, Kellogg School of Management, Northwestern University (September 1976 to August 1979).

C1. RELATED PUBLICATIONS:

C2. OTHER SIGNIFICANT PUBLICATIONS.
   Yuri Cantor, Constantinos Djouvas, and Nancy Griffeth. Testing a Network by Inferring its State Machine from Network Traces, in International Conference on Software Engineering Advances, ICSEA 2006.

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Approved by the School of Professional Studies Governing Council, September 10, 2010


D. SYNERGISTIC ACTIVITIES:
Member, Educational Policy Committee, Lehman College Department of Mathematics and Computer Science, 2005-2006.
Member, Executive Committee, Department of Computer Science, Graduate Center, City University of New York, 2006-2007.
Graduate Curriculum Committee Chair, School of Information and Computer Science, Georgia Institute of Technology, 1983-1986.

E. COLLABORATORS AND OTHER AFFILIATIONS:
i. Collaborators:
Eric Freudenthal (University of Texas at El Paso), Myla Archer (Naval Research Lab),
Elizabeth Leonard (Naval Research Lab), Nancy Lynch (Massachusetts Institute of Technology),
Rui Fan (Massachusetts Institute of Technology), Calvin Newport (Massachusetts Institute of Technology),
Laurent Michel (University of Connecticut), Alex Shvartsman (University of Connecticut),
Nasir Memon (Polytechnical University), Mete Kok (BMCC).

ii. Thesis Advisor:
Robert L. Ashenburt (University of Chicago).

iii. Ph.D. Students:
John Miller (Georgia Institute of Technology), Ke Wang (Georgia Institute of Technology),
Martin Maldonado (Georgia Institute of Technology), Constantinos Djouvas (The City University of New York),
Jiang Wu (The City University of New York), Yuri Cantor (The City University of New York).

iv. Master’s Students:
Rick Efruss (Georgia Institute of Technology), Sandra Tinta (LSAMP, Lehman College),
Katherine Shirley (LSAMP, Lehman College).

v. Undergraduate Students (all at Lehman College):
Gerome Ferreira (REU), Andres Abreu (REU), Abdoulaye Traore (REU), Leonel Henriquez (REU),
Sebastian Crucceanu (internship), Kevin Ruiz (REU), Sachiko Miyazawa (REU),
Alessandro Ramirez (internship)
Transportation Research Board
Intelligent Transportation Society of NY (Member of the Board of Directors)

RESEARCH PROJECTS

This study will develop and evaluate proposals for how innovative policies and management strategies throughout the I-278 corridor can maximize the economic, environmental, and quality of life benefits from the region’s and the nation’s investment in the Cross-Harbor Freight Tunnel. The study will take a holistic, interdisciplinary approach, drawing leading scholars from the region’s universities and civic organizations together to develop fresh policy perspectives.

Portable Work Zone Barrier (Sponsored by NJDOT, 2007-2009)
The objective of this project is to increase safety at highway work zones for maintenance & construction field workers and motorists through implementation of a mobile work zone protection device that serves as an extendable physical barrier to protect the flank of a work zone.

Development of New Jersey Rates for NJCMS Incident Delay Model (Sponsored by NJDOT, 2006-2007)
The main objectives of this study are to determine if and how existing incident reports and database can be used to generate New Jersey specific, good estimates of incident rates, response times, clearance times for both peak and off-peak periods, determine if new data in the form of actual field observations of incidents (from the beginning to the end of an incident) will be reasonable and useful to supplement and tie together the existing data, and to develop an up-to-date incident database to store the information required and generated un-biased estimates an inputs required by the NJCMS model.

Pedestrian Safety (Sponsored by NYMTC, 2006-2007)
The objective is to prepare a summary overview of pedestrian safety issues for NY Metropolitan Transportation Council (NYMTC) and its Safety Advisory Working Group (SAWG). The results of this study are intended to be used by the SAWG in developing recommendations on how NYMTC can best assist its member jurisdictions in developing and implementing effective strategies to reduce the number and severity of pedestrian accidents.

Identification of Traffic Control Devices for Mobile and Short Duration Work Operations (Sponsored by NJDOT, 2004-2007)
The overall objective of this research project is to study mobile work zone safety with particular attention to the identification of work zone safety devices, information systems for the reduction
AHMET METE KÖK

Education

- Ph.D. Computer Science, 1994. CUNY Graduate School
  Thesis: Performance Characteristics of Optimally Configured
  Global Networks
- M.S. Computer Science, 1984, Polytechnic University.
- B.S. Computer Science, 1982, SUNY at Stony Brook

Employment:

- 1985 – Present Professor
  CUNY – Borough of Manhattan Community College,
  Computer Information Department.
  Chemical Bank – Electronic Banking Division
- 1982 – 1983 Programmer
  New York Power Authority – Planning and Forecasting
  Department

Grant Activities:

- (2007 – 2009) NSF DUE 06330633 ($191,584) – PI, CCLI :
  Using Educational Robotics to Improve Student Retention and
  Recruitment in STEM Education
- (2004 – 2009) NSF DUE 0402635 ($928,346) – co PI, ATE:
  Partnership in CyberSecurity and Information Assurance
- (2002 – 2003) NSF DUE 0125637 ($ 74,999) – co PI, CCLI :
  Multimedia Based Calculus with e-folios
  P120A030015 – PI, MSEP Project in Minority STEM Recruitment
- (1999 – 2002) Department of Education ($475,000) –
  P116D990229 – co - PI, FIPSE Project in Telementoring.
  Connections Project Multimedia Curriculum Development
  Project in Multimedia Programming and Design

Presentations:

- 2009 – SIGCSE Conference Showcase, Robotics Curriculum in
  CS1 and CS2
- 2008 - NSF ATE Conference Showcase, Cybersecurity Curriculum
  Presentation
- 2006 – Working Connections Multimedia Instruction Workshop
HERVÉ QUENEAU
CURRICULUM VITAE

ADDRESS AND CONTACT INFORMATION

Hervé Queneau  
Associate Professor and Co-Deputy Chair of Graduate Program  
Department of Economics  
Office 223 A  
2900 Bedford Avenue  
Brooklyn, NY 11210  
Tel: (718) 951-5000 (Ext. 2097)  
E-mail: Hgueneau@brooklyn.cuny.edu

EDUCATION

• Ph.D. in Economics, University of Paris IX Dauphine, France, 1996.

• Advanced Studies Diploma in Personnel Management, Development of Human Resources, and Industrial Relations, National Conservatory of Arts and Crafts (CNAM) and HEC School of Management, Paris, France, 1992.

• MA (equivalent) in Economics, University of Paris I Panthéon-Sorbonne, France, 1991.

WORK EXPERIENCE

• Co-Deputy Chair of Graduate Program, Brooklyn College of the City University of New York, Department of Economics, July 2006 – Present.

• Associate Professor, Brooklyn College of the City University of New York, Department of Economics, Business Program, September 2004 – Present.

• Research Associate, University of Paris I Panthéon-Sorbonne, Laboratoire Georges Friedmann, January 2002 - Present.

• Assistant Professor, Xavier University, Cincinnati, Ohio, Department of Economics and Human Resources, January 1998 – May 2004. Awarded tenure and promoted to the rank of Associate Professor in 2004.

• Adjunct Professor, University of Paris IX Dauphine, Department of Economics, January 1997 – June 1997.

TEACHING INTERESTS

- Human resource management
- Workplace diversity
- Survey research and methods
- Managerial economics

TEACHING EXPERIENCE

▷ Brooklyn College

- Strategic Human Resource Management (Undergraduate)
- Strategic Human Resource Management - Online (Undergraduate)
- Gender Diversity in the Workplace: A Global Perspective (Undergraduate)
- Seminar in Business Management and Policy (Undergraduate)
- Seminar in Marketing Research (Undergraduate)

▷ Xavier University

- Human Resources in a Diverse Society (Undergraduate)
- International Human Resources (Undergraduate)
- Compensation Theory and Practice (Undergraduate)
- Introduction to Human Resources (MBA)
- Compensation Issues (MBA)
- International Human Resources (MBA)
- Labor Economics (MBA)
- Human Resources (Executive MBA)

▷ University of Paris IX Dauphine

- Economic Policies (Undergraduate)
- Macroeconomics (Undergraduate)
Biographical Sketch for Paul Russo

Research Interests:

- Online Communities
- Technology Adoption
- Distributed Collaboration
- Knowledge Management

Education:

<table>
<thead>
<tr>
<th>Date</th>
<th>Institution</th>
<th>Degree</th>
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<tr>
<td>May 11 (exp.)</td>
<td>NYU Polytechnic, New York, NY</td>
<td>PHD, Technology Management</td>
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<tr>
<td>May 91</td>
<td>University of Dallas, Dallas, TX</td>
<td>MBA, Engineering Management</td>
</tr>
<tr>
<td>May 87</td>
<td>Vanderbilt University, Nashville, TN</td>
<td>MS, Electrical Engineering</td>
</tr>
<tr>
<td>May 85</td>
<td>Loyola University, New Orleans, LA</td>
<td>BS, Physics</td>
</tr>
</tbody>
</table>

Publications:


Presentations:


Teaching

Brooklyn College, Brooklyn NY (January 2008 – present)

- Organizational Behavior (Graduate)
- Organizational Behavior and Public Policy (Undergraduate)
- Introduction to Management (Undergraduate)
Synergistic Activities:
NSF CREST Program Award, Proposal No. 0833180, responsible for the development of collaboration infrastructure as well as courses and best practices manual for Online Collaboration in Distributed Research Teams

NSF CDI Program, Proposal No. 0913989, coauthored research components of the proposal which focused on studying how research scientists use complex algorithms and massive data sets as well as specialized equipment to collaborate at a distance. In addition, managed the proposal development process.

NSF SMP Program, Proposal No. 1011322, coauthored proposal to develop a new master’s degree in information systems for sustainable urban infrastructures. In revision. Announcement expected by June.

Led five large-scale collaborative technology projects that were interdisciplinary and developed by international distributed teams

Governors Island Computer Science and Information Technology Research Center, Inc., Board of Directors

Conference Chair, 2007 & 2008; Professional Development Chair; Region 3 Executive Board Association of Continuing Higher Education

Led development of CUNY’s first wholly online degree, The CUNY Online Baccalaureate; Project Manager of the City University of New York New Community College Initiative

Professional Experience:

Jul 99 – Present  City University of New York (CUNY) New York, NY
1. Director of Online Programs, School of Professional Studies
2. Project Manager, CUNY New Community College Initiative

Previous Title: Associate Dean, Baruch College, Professional Education

Jun 92 – Aug 99  LPRusso Consulting, New York, NY Technology Management Consultant

Nov 88 - May 92  Texas Instruments Inc., Dallas, TX Senior Systems Engineer

Professional Organizations:

Association of Computing Machinery (ACM)
Association of Information Systems (ICS)
Association for the Advancement of Artificial Intelligence
The Sloan Consortium (Sloan-C)
Academy of Management (AOM)

Doctoral Advisors:
Oded Nov, Dissertation Committee Member – Technology Management Department, NYU Poly
Anne-Laure Fayard, Dissertation Advisor – Technology Management Department, NYU Poly
CURRICULUM VITA

William Duncan Solecki
CUNY Institute for Sustainable Cities and
Department of Geography
Hunter College – City of New York
695 Park Avenue
New York, NY 10021
Voice mail: (212) 772-4536
Email: wsolecki@hunter.cuny.edu

Education
Ph.D. 1990 Geography - Rutgers University, New Brunswick, New Jersey
M.A. 1987 Geography - Rutgers University, New Brunswick, New Jersey
A.B. 1984 Geography - Columbia University, New York, New York

Academic Positions
2006- Director, CUNY Institute for Sustainable Cities, City University of New York.
2005-2007 Chair, Department of Geography, Hunter College – City University of New York.
2004-2005 Fellow, Center for Place, Culture, and Politics, City University of New York-Graduate Center
2003- Professor, Department of Geography, Hunter College – City University of New York.
2003- Faculty, Earth and Environmental Science Doctoral Program, City University of New York-Graduate Center.
2002-2003 Professor, Department of Earth & Environmental Studies, Montclair State University.
1997-2002 Associate Professor, Department of Earth & Environmental Studies, Montclair State University.
1996-1997 Associate Professor, Department of Geography, Florida State University.
1991-1996 Assistant Professor, Department of Geography, Florida State University.
1990-1991 Visiting Assistant Professor, Department of Geography and Planning, West Chester University.

Other Positions
2002 Lecturer, Environmental Science, Policy, and Management, MPA Program, Columbia University, Biosphere2 Campus.
2001-2003 Faculty, Center for Environmental Prediction, Rutgers University.
1990 Summer Session Instructor, Department of Geography, Rutgers University.

Publications


Boleslaw K. Szymanski, Rensselaer Polytechnic Institute
Claire and Roland Schmitt Distinguished Professor of Computer Science
Director, Center for Pervasive Computing and Networking, and
Social and Cognitive Networks Academic Research Center
IEEE Fellow; Editor-in-Chief: Scientific Programming

Education
M.Eng. (Electronics) -- Warsaw Polytechnic University, Warsaw, Poland, 1973
Ph.D. (Computer Science) -- National Academy of Sciences, Warsaw, Poland, 1976

Professional Career
University of Pennsylvania, Philadelphia, PA
1982-1985 Visiting Assistant Professor, Computer and Information Science
Rensselaer Polytechnic Institute, Troy, NY
1985-1989 Associate Professor of Computer Science
1990-2007 Professor of Computer Science
1993-1994 Acting Department Chair, Department of Computer Science
1997-2001 Associate Dean for Information Technology
1997-2002 Chair of Information Technology Research Board
2003-present Founding Director, Center for Pervasive Computing and Networking
2007-present Claire and Roland Schmitt Distinguished Professor

Entrepreneurship and Industrial Consulting
Optimare, Inc., Newtonville, NY (2004), co-founder and President,
Premonitia, Inc., Waltham, MA (2001), and EnterNet Inc., Troy, NY (2000), co-founder,
CCCC, Philadelphia, PA (1983-88), chief scientific officer and consultant.

Consulting: Gauda, Inc., San Jose, CA; Emerson, Inc., St. Louis, MO; International
Medical Programs, Albany, NY; Cardiogam Imaging, Schenectady, NY; IBM Corp.,
Poughkeepsie, NY; Research and Development Center, General Electric, Schenectady,
NY; United Nation Development Office, Vienna, Austria, several law firms.

Professional Society Memberships, Honors, Awards and Activities
Appointed the Claire and Roland Schmitt Distinguished Professor, RPI, 2007
William H. Wiley Distinguished Faculty Award, RPI, 2003
IEEE Fellow (since 1999), Computer Society of IEEE: member since 1982
ACM National Lecturer (1988-89), ACM: member since 1982
Editor-in-Chief: Scientific Programming (since 2000)
Area Editor: SIMULATION: Transactions of the Society for Modeling Simulation
International (2003-2007)
Editorial Board Member: Scalable Computing: Practices & Experience (since 2005), and
Computers and Informatics (since 2009)
Guest Editor: ACM SIGAPP Applied Computing Review (1996),
Journal of Parallel Algorithms and Applications (1996),
First Prize, Int. Parallel Computation Competition, Mannheim, Germany, 1993
NASA Certificate of Recognition for development of technical innovation, 1997
Gold Medal at the International Olympiad in Mathematics, 1988

Chair, 3rd Workshop on Compilers, Languages and Run-Time Systems, May, 1995
Program Committee Co-Chair, Annual Conference of ITA, Washington, DC, Sept. 2007
Vice-Chair, NSF-RPI Workshop on Pervasive Computing and Networking, April 2004
Vice-Chair of Program Committee, PPAM05, PPAM07, since 2005
Chair, Network Simulation Track, European Modeling and Simulation Symp., 2006
Tutorials: SCSC'02, IEEE ICA3PP'96, ACM SAC'96, ISC'88

*Senior Scientific Advisor*, Create-Net, European Research Consortium, Trento, Italy
*Scientific Advisor*, Gauda Inc. since June 2006.
*Scientific Advisor*, Quantum-PI Inc. since August 2007.

**Research Interests**
Distributed computer systems, including, networking, operating system, performance,
reliability and security. More specific topics include sensor network, mobile networks, and
network management and simulation, including the Internet, network middleware and Web-based
computing. Simulation and modeling of computer, network and biological systems.
Scientific parallel computation, in particular run-time optimization, load balancing and
monitoring of parallel and distributed object-oriented programs. Algorithm design and
verification for parallel and distributed systems.

**Administrative Experience**
*Founding Director the Center for Pervasive Computing and Networking* (since 2003): developed the vision of the center and assembled about 25 faculty research team
participating in the center research with focus on sensor networks, computer networking,
embedded system software and computer security. Developed and implemented research
program supported that this year received over 6 million dollars in government grants and
ushered the Center into the International Technology Alliance, a quarter of a billion dollar
research consortium led by the IBM Corp. In September 2009, the Center received $35.5
million collaborative agreement from ARL to establish Social and Cognitive Networks Academic
Research Center at RPI under Dr. Szymanski leadership. Researchers from MIT, Harvard, IBM
Corp., and several other universities are the members of this center.

*Associate Dean for Information Technology* (1997-2001): principal member of the
team that created the Information Technology Program at RPI and developed IT curriculum;
chair of Computer Science department faculty search that hired eleven assistant professors from
top schools since 1997, six of whom already won prestigious NSF Career's Awards; chair of the
"Future of School of Science" panel and principal author of a report that identified Information
Technology and Biotechnology as strategic directions for the school in 1999 (these two
directions were later selected as growth initiatives for the entire university); currently leading an
integration of research in Information Technology involving Schools of Engineering, Science
and Humanities & Social Science.
Name: Abdullah Uz Tansel

1. **EDUCATION**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Institution</th>
<th>Field</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>Middle East Technical University</td>
<td>Computer Engineering</td>
<td>1981</td>
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<tr>
<td>MBA</td>
<td>University of Southern California</td>
<td>Quantitative Business Analysis</td>
<td>1975</td>
</tr>
<tr>
<td>MS</td>
<td>Middle East Technical University</td>
<td>Computer Engineering</td>
<td>1974</td>
</tr>
<tr>
<td>BS</td>
<td>Middle East Technical University</td>
<td>Management</td>
<td>1972</td>
</tr>
</tbody>
</table>

2. **FULL-TIME ACADEMIC EXPERIENCE**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Rank</th>
<th>Field</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baruch College</td>
<td>Professor</td>
<td>Computer Information Systems</td>
<td>1994 - Present</td>
</tr>
<tr>
<td>Baruch College</td>
<td>Associate Professor</td>
<td>Computer Information Systems</td>
<td>1986 - 1994</td>
</tr>
<tr>
<td>Baruch College</td>
<td>Assistant Professor</td>
<td>Computer Information Systems</td>
<td>1984 - 1986</td>
</tr>
<tr>
<td>Baruch College</td>
<td>Visiting Professor</td>
<td>Computer Information Systems</td>
<td>1983 - 1984</td>
</tr>
<tr>
<td>Middle East Technical University</td>
<td>Assistant Professor</td>
<td>Management</td>
<td>1981 - 1983</td>
</tr>
<tr>
<td>Middle East Technical University</td>
<td>Instructor</td>
<td>Management</td>
<td>1977 - 1981</td>
</tr>
<tr>
<td>Middle East Technical University</td>
<td>Teaching Assistant</td>
<td>Management</td>
<td>1975 - 1977</td>
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3. **PART-TIME ACADEMIC EXPERIENCE**

<table>
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<tr>
<th>Institution</th>
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<tbody>
<tr>
<td>Middle East Technical University</td>
<td>Student Assistant</td>
<td>Management &amp; Computer Science</td>
<td>1971 - 1974</td>
</tr>
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</table>

4. **NON-ACADEMIC EXPERIENCE**

<table>
<thead>
<tr>
<th>Place of Employment</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dokuz Eylul University &amp; Ege University, Izmir, Turkey</td>
<td>Visiting scholar, UNDP TOKTEN program</td>
<td>June 12- 27, 2003</td>
</tr>
<tr>
<td>New York Software Industry Association</td>
<td>Consultant, Software development Database Training, UNDP TOKTEN program</td>
<td>2001</td>
</tr>
<tr>
<td>Etibank, Ankara, Turkey</td>
<td>Analyst programmer</td>
<td>June 6 - 23, 1988</td>
</tr>
<tr>
<td>Project on reorganization of State Economic Enterprises, Ankara, Turkey</td>
<td>Consultant</td>
<td>1980-1982</td>
</tr>
<tr>
<td>Computer Center, Business School, University of Southern California</td>
<td>Programming Advisor</td>
<td>1972 -1974</td>
</tr>
</tbody>
</table>

5. **EMPLOYMENT RECORD AT BARUCH**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Dates</th>
</tr>
</thead>
</table>

Proposal to Establish a Master of Science in Information Systems  
CUNY School of Professional Studies  
Approved by the School of Professional Studies Curriculum Committee, July 15, 2010  
Approved by the School of Professional Studies Governing Council, September 10, 2010

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6. **PUBLICATIONS IN FIELD OF EXPERTISE**

**A. Books:**


**B. Papers in Professional Journals:**

(1) **Articles:**


EDWIN H VAN LEEUWEN, BSc (Hons), Ph.D, FTSE

Professor/Director Geothermal Energy Systems, Victoria
Melbourne Energy Institute
McCoy Building,
School of Earth Sciences,
University of Melbourne, Victoria 3010
Mobile +61-409-654-447
Phone +61-3-8344-4309
Email: edwinvl@unimelb.edu.au or edwin.vanleeuwen@roymorgan.com

Dr Edwin van Leeuwen is currently a Professor at Melbourne University responsible for assessing the practical aspects of developing geothermal hot rock energy systems for the State of Victoria. Recently he visited Japan with the Victorian Minister of Energy to assess various developments and opportunities for alternate energy systems.

Until July 2009, Dr. Edwin van Leeuwen was Global Manager Strategic Countries and External Relations for BHP Billiton company focused primarily on developing strategic alliances and technology joint ventures in Russia, China and India. He has successfully developed strategic links in Russia with groups such as Russian Academy of Sciences, the Steklov Mathematical Institute, Moscow State University( uranium processing, chemical physics, mathematics, geology geophysics), Lebedeev Institute ( cold matter physics), Mendeleev University(chemical physics), St. Petersburg University (geology, geophysics, mathematical optimisation and computer science) and with other universities. He has been responsible for establishing links with organisations such as Rosatom, and uranium mines in Siberia and Kazakhstan. He successfully transferred many new technologies and innovations to BHP Billiton in exploration geophysics and mineral processing. In China he has responsibility for the Chinese Academy of Science (CAS) strategic alliance. BHP Billiton is one of the very few companies or organisations to have a strategic alliance with both the CAS and the Graduate University of CAS. In India he was been responsible for supporting the Monash University-IITB research academy and successfully establishing and developing links with the Indian School of Mines, CSIR Chemical Engineering and several of India’s Institutes of Technology. In China and India he successfully negotiated collaborative projects covering topics such as hydro metallurgy, oil migration, and data mining applied to complex geophysical data sets in mining and petroleum, and developing new techniques in process engineering. He also set up graduate and intern programs, providing BHP Billiton with a talent pool of scientists and engineers to work in BHP Billiton's various business operations. He has also been actively involved in technology and research activities in North America and Europe with both Universities and Industry.

Dr Edwin van Leeuwen undertook the above responsibilities whilst jointly being the Global Manager of BHP Billiton’s Exploration, Mining and Resource Optimisation Technologies Group. This group was responsible for developing new exploration and mining technologies to ensure BHP Billiton stays at the forefront of its competitive business’s. In this position he has made substantial contributions to exploration geophysics in developing the world’s first airborne gravity gradiometer system for mapping mineral and hydrocarbon structures under cover from a light aircraft(Falcon). This technology won the team the CSIRO award for excellence in science in 2000, the Graham Sands award from the Australian Society for Exploration Geophysics in 2003 and the Australian Institute of Minerals and Mining award in 2006. His team has also developed various EM and magnetic systems for mineral exploration. The gravity gradiometer technology has now become a major DARPA project for homeland security(BAA-09-20). In 2000 he commenced a series of new research programs to develop a new approach to mine and resource optimisation which has been widely accepted by the company and produced significant financial benefits, in excess of USD$4B over the live of mines. These programs have been widely implemented through out the company and have significant strategic value. In 2005 he commenced a new research program in control source electromagnetics which has be successfully implemented as a new hydrocarbon search tool within BHP Billiton.

Dr van Leeuwen has held several other senior positions within BHP Billiton managing the Advanced Systems Engineering Group, BHP’s External Research and Development Portfolio and was also a member of the BHP’s Business Development Group. Prior to his career with BHP Billiton he spent five years working in the Australian
Defence Department on advanced ballistics (with Lawrence Livermore and Los Alamos National Labs) and underwater systems.

Dr van Leeuwen is a graduate of the Australian National University with B.Sc in Mathematics and Theoretical Physics and a Ph.D from Monash University in Applied Mathematics.

He has been an advisor to the Australian Academy of Sciences on Mathematics in Australia in 1995 and 2006 and the Australian Government on various technology matters and represented Australia on key technology missions and Senate Reviews.

He has served on Boards of a number of international consortia involving Australia, Japan, USA, Canada, South Korea and Europe, was the chairman of the Holonics Systems program and was the international chairman and co-chairman for 10 years. He was a Board member of the International Intelligent Manufacturing Systems program and Australia’s Industry representative at international meetings. He has also managed programs with Universities and Industry spanning Japan, USA, Canada, and EU on Advanced Systems. He also sat on several University Boards and Cooperative Research Centres in Australia.

In 2000, Dr van Leeuwen was elected a fellow of the Australian Academy of Technology Science and Engineering for his contributions and leadership to Science and Engineering. In 2003 he was awarded the Centenary Medal for services to Australian Society in Research and Development and understanding and promoting how science can deliver value to society. He was awarded the prestigious ATSE Clunies Ross Award for his contributions to exploration geophysics in 2002 and in 2010 a VESKI Fellowship.
Curriculum Vitae

Felisa J. Vázquez-Abad

December 17, 2009

1 Personal Data

Academic Qualifications

<table>
<thead>
<tr>
<th>Degree</th>
<th>University</th>
<th>Country</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D. in Applied Mathematics</td>
<td>Brown University</td>
<td>U.S.A.</td>
<td>1989</td>
</tr>
<tr>
<td>M.Sc. in Statistics and Operations Research (thesis with honors)</td>
<td>Universidad Nacional Autónoma de México (UNAM)</td>
<td>Mexico</td>
<td>1984</td>
</tr>
<tr>
<td>B.Sc. in Physics</td>
<td>UNAM</td>
<td>Mexico</td>
<td>1983</td>
</tr>
</tbody>
</table>

Academic Positions

09/09– Professor. Dept. of Computer Science, Hunter College of the City University New York.

03/09-05/09 Principal Research Fellow. Dept. of Economics, University of Melbourne.

08/04-02/09 Associate Professor. Dept. of Mathematics and Statistics, University of Melbourne.

06/03-09/05 Professor (Assistant 93, Assoc 96, Full 2004). Dept. of Computer Science and OR, Université de Montréal.

10/01-06/02 Principal Research Fellow. Dept. of Electrical and Electronic Engineering, University of Melbourne.

10/0/8-08/99 and 08/09-12/99 Research Fellow. Dept. of Electrical and Electronic Engineering, University of Melbourne.

03/93-06/93 Visiting Researcher. Dept. of Computer Science and OR, Université de Montréal.

12/91-12/9 Research Associate. INRS-Télécommunications, Université du Québec.

06/90-11/91 Postdoctoral Student. INRS-Télécommunications, Université du Québec.

07/89-05/90 Visiting Assistant Professor. Division of Applied Mathematics, Brown University.

06/89-07/89 Visiting Research Associate. Division of Applied Mathematics, Brown University.

07/86-06/87 Research Assistant. Division of Applied Mathematics, Brown University.

04/83-01/85 Research Assistant. Dept. of Physics, UNAM.
2 Teaching and Supervision

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory and Methods of Stochastic Optimization</td>
<td>Department of Statistics and Decision Support Systems, University of Vienna, 13 hours (2009)</td>
</tr>
<tr>
<td>Optimisation under Probability Constraints</td>
<td>Electricité de France, 6 hours course EDF, Paris, France (2007)</td>
</tr>
<tr>
<td>Statistics for Mechanical Engineers</td>
<td>B Sc, Univ of Melbourne (2004, 2005)</td>
</tr>
<tr>
<td>Theoretical Foundations of Computer Simulation</td>
<td>Postdoctoral, 15 hours course Valladolid, Spain (2002)</td>
</tr>
<tr>
<td>Stochastic Approximation, with applications to fairness in telecommunications</td>
<td>Summer Research Institute, Lausanne, Switzerland (2001).</td>
</tr>
<tr>
<td>Sensitivity Analysis for Discrete Event Systems</td>
<td>Postdoctoral, 6 hours course Ghent, Belgium (2000).</td>
</tr>
<tr>
<td>Weak Convergence of Stochastic Approximations</td>
<td>Postdoctoral, 12 hours course University of Melbourne (1999).</td>
</tr>
<tr>
<td>Non-linear optimisation</td>
<td>Certificat, Univ of Montreal (1993).</td>
</tr>
</tbody>
</table>

Graduate Supervision: Supervised 9 M Sc, 3 Ph D and 2 Honours Thesis
Undergraduate Supervision: Supervised 12 Summer projects and 13 research assistantships.

3 Research

Awards and Patents

- **2000 Jacob Wolfowitz Prize** for Theoretical Advances in the Mathematical and Management Sciences, for the paper:
  

- **S-JET**, a methodology for channel reservation schemes in Optical Burst Switching Networks, Bruniilde Sansó (École Polytechnique, Montréal), Felisa J. Vázquez-Abad and Eloim Gutiérrez-Cabrera (DIRO). US Patent 2004. This work was the basis for the Master’s research project of Eloim Gutiérrez-Cabrera.
## APPENDIX XIV – EVIDENCE OF JOBS

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Industry</th>
<th>Degree/Experience</th>
<th>Major Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Engineer</td>
<td>Health Information</td>
<td>- Bachelor’s degree, master’s degree in Comp. Sci. pref.</td>
<td>- Building and maintaining database</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Data modeling</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Ability to solve complex technical problems</td>
</tr>
<tr>
<td>Reporting Developer</td>
<td>Technology Consulting</td>
<td>- Bachelor’s or master’s degree in computing/math field 3-4 years</td>
<td>- SQL programming</td>
</tr>
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<td></td>
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<td>- Data structure design</td>
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<td></td>
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<td></td>
<td>- Life cycle project development</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Data analysis and management</td>
</tr>
<tr>
<td>Data Warehouse/Business Intelligence Developer</td>
<td>Health Information</td>
<td>- Bachelor’s degree, master’s degree in Comp. Sci. pref.</td>
<td>- SQL programming</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Data modeling</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Data warehousing</td>
</tr>
<tr>
<td>Analyst, Strategic Analytics &amp; Modeling</td>
<td>Hospitality</td>
<td>- Master’s degree + 1-3 yrs. exp. or bachelor’s degree + 5-6 yrs. exp. (degree in quantitative field)</td>
<td>- Database programming (SQL, SAS)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Advanced stats</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Predictive modeling and data analytics</td>
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<tr>
<td></td>
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<td>- Proficient with large data sets</td>
</tr>
<tr>
<td>Jr. Quantitative Developer</td>
<td>Finance</td>
<td>- Master’s degree in math, stats, or computing field</td>
<td>- Implement and maintain quantitative model</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Design and develop the computer programs</td>
</tr>
<tr>
<td>Data Scientist</td>
<td>Media</td>
<td>- Master’s degree in statistical field</td>
<td>- Building and evaluating predictive models</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Applied stats</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Understanding of machine learning algorithms</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Programming and database programming</td>
</tr>
<tr>
<td>Systems and Data Analyst</td>
<td>IT and healthcare</td>
<td>- Master’s degree in computing/math field</td>
<td>- Data modeling</td>
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<td></td>
<td></td>
<td></td>
<td>- Data warehousing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Database architecture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Documentation and technical analysis</td>
</tr>
<tr>
<td>Jobs Related to Urban Sustainability</td>
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</tr>
<tr>
<td>Advanced Analytics &amp; Optimization SPSS Consultant</td>
<td>IT/Smart Computing</td>
<td>- Master’s degree preferred 2-3 years experience</td>
<td>- Advanced Excel-based modeling skills</td>
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<td></td>
<td>- SPSS</td>
</tr>
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<td>- Basic knowledge in subjects of math/stats/ops research</td>
</tr>
<tr>
<td>GIS Energy Analyst</td>
<td>Energy and Engineering</td>
<td>- Bachelor’s degree in related discipline, master’s degree preferred 3+ years experience</td>
<td>- Working knowledge of technological products/apps</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Excellent writing, research, communication skills</td>
</tr>
<tr>
<td>Smart Grid Senior Software Systems Engineer</td>
<td>Energy</td>
<td>- BS in Systems Eng., Comp. Sci., or Software Eng., Master’s preferred. 10 years exp. in architecture, design, and implementation of large scale software systems</td>
<td>- Skills in system and data modeling</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Success working with technical teams</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Superior analytical and communication (written and oral) skills</td>
</tr>
</tbody>
</table>
Database Engineer

About Emerging Health Information Technology, Yonkers, NY

Emerging Health Information Technology is a wholly owned subsidiary of Montefiore Medical Center. Emerging Health IT, a healthcare IT consulting and professional services company, is a dynamic organization that provides hospitals and medical centers with world-class healthcare information solutions. We provide an exciting, fast-paced environment in which collaboration and innovation are rewarded and where individuals can make a difference in the lives of patients. Join us in our mission to improve the quality of healthcare through advanced IT solutions! Emerging Health IT is located in Yonkers, NY.

The Database Engineer will be responsible for data extraction, transformation, cleansing, conforming and transport, utilizing ETL to support clinical and business intelligence reporting, such as within a data warehouse program. Support a complex patient care application that depends heavily on enterprise data. Establishing database management systems, standards, guidelines, and quality assurance for database deliverables. Provide outstanding client service and promotes to the organization's mission of utilizing information technology, specifically, enterprise data assets, information technology for analytics and reports aimed at improving the quality of patient care.

Responsibilities include:

- Establish and maintain SQL Server database management systems, standards, guidelines, and quality assurance for database deliverables including conceptual design, logical database, capacity planning, external data interface specification, data building plan, data maintenance plan and security policy.
- Leverage data extract, transform and load (ETL) technologies to accelerate development of data flows, to schedule them and to organize them for ongoing maintenance by a team.
- Conduct analysis of source system data with client stakeholders and source system owners to determine a) capacity to meet reporting needs and b) specific transformation rules that need to be applied.
- Determine how tables relate to each other and how fields interact within the tables for a relational model.
- Participate in decisions around data warehouse architecture and more specifically data models and database design.
- Code complex programs, databases scripts, and ETL packages that meet data flow requirements.
- Generate data for testing purposes. Auto-generate massive amounts of data with rules for performance testing and derives logical processes on technical platforms.
- Participate in quality assurance and develops lead application code in the client server environment.
- Provide expertise in database development, maintenance, and administration.
- Ensure that the tables and fields provided in the database A.
- Assist with process engineering (definition training and implementation) for SDLC.
- Adapt business requirements, developed by modeling/development staff and systems engineers, and develop the data, database specifications, and table and element attributes for an application.
- Determine the appropriateness of data for storage and the optimum storage organization.
- Determine how tables relate to each other and how fields interact within the tables for a relational model.
- Work with software developers, business intelligence analysts and report analysts to ensure compliance with database procedures.

- Bachelor's degree or equivalent experience is required.
- Master's of Computer Science desirable.
- Expert level SQL programming skills.
- Experience utilizing SSIS.
- Expert level Data modeling.
- Data Warehousing experience.
- Experience with business concepts and data in healthcare domain.
- Familiarity with data quality and profiling best practices is desirable.
- Experience building and maintaining a database.
- Possess and apply advanced technical knowledge to process innovation and complex problem solving.
- Demonstrate an exemplary level of accomplishment in job performance.
- Develop highly complex information solutions; Knowledge of stability of alternative solutions.
- Proactively identify potential issues, helpful enhancements and solutions for systems.

- Provide consultation on issues and requests from clients that require implementation or creation of a custom solution.
- Identify and solve complex technical problems independently and generate innovative solutions.
- Function independently and have the ability to provide guidance to coworkers.
- Implement continual process improvement to measure the quality of the processes and services in place.
- Utilize business expertise to align client needs with the service provided.

If interested, please apply online at http://trak1.tmps specialist.com/AppyClick.aspx?ic=1675004-1797-1000

Emerging Health IT
Phone: not applicable
Skills: Expert level SQL programming skills, Strong SSIS, Expert level Data modeling and Data Warehousing experience

Date: 2/4/2011
Location: Yonkers, NY
Area Code: 914
Tax Term: FULLTIME
Pay Rate: 100K+
Length: Full-time
Position ID: 176406
Dios ID: 10266667
Travel Required: none
Telecommute: no

DW/BI Developer with SSAS/SSIS/ETL.

This position is full-time opportunity with our client. Salary is $100k/$110k+ Bonus up to 16% plus 37 paid days off + 401K 5% of salary goes into pension after one year. NO Visa sponsorship available. The candidate will have to be eligible for Security Clearance. Should have excellent communication.

The Database Engineer will be responsible for data extraction, transformation, cleaning, conformity and transport, utilizing ETL to support clinical and business intelligence reporting, such as within a data warehouse program. Support a complex patient care application that depends heavily on enterprise data. Establishing database management systems, standards, guidelines, and quality assurance for database deliverables. Provide outstanding client service and contribute to the organization’s mission of utilizing information technology, specifically, enterprise data assets, information technology for analytics and reports.

Responsibilities include:
Establish and maintain SQL Server database management systems, standards, guidelines, and quality assurance for database deliverables including conceptual design, logical database, capacity planning, external data interface specification, data loading plan, data maintenance plan and security policy. Leverage data extract, transform and load (ETL) technologies to accelerate development of data flows, to schedule them and to organize them for on-going maintenance by a team. Determine how tables relate to each other and how fields interact within the tables for a relational model. Participate in decisions around data warehouse architecture and more specifically data models and database design. Code complex programs, database scripts, and ETL packages that meet data flow requirements.

Qualifications:
Bachelor’s degree or equivalent experience is required.
Master’s of Computer Science desirable.
Expert level SQL programming skills
Strong SSIS
Expert level Data modeling
Data Warehousing experience

MARRS Professional Services Inc
Web: [http://www.marrs-nc.com/](http://www.marrs-nc.com/)
Jr. Quantitative Developer

About the Job
JR. QUANTITATIVE DEVELOPER
Convert, implement and maintain quantitative model, design & develop the computer programs of trading systems and strategies. Req. Master or foreign equiv. in CS/CE/ Math/Statistics or closely related field, familiarity with front tracking method and its implementation Frontier, parallel numerical simulation of high speed jet breakup in 2D & 3D with AMR, profic. in Linux, Perl & C/C++/Java. Mail resume to President, RiskVal Financial Solutions LLC, 120 W 31st St., 6th Floor, New York, NY 10001. Must refer to the Job #NYXT1010.
Title: Data Scientist
Department: Data Science
Location: New York

Profile

Statistical analysis and learning technologies are central to our business. We are building a world class Data Science team, and as such we have several opportunities for computing-oriented applied statisticians and statistically oriented computer scientists, who have experience with predictive modeling for real-world applications with large volumes of data.

Responsibilities

The Data Scientist will interact closely with the data science and business development teams as well as senior management on the development of core technologies, design and execute assessments and other analyses. The Data Scientist will also work with engineers who will implement the technologies in production. The position requires a results driven individual who can thrive as an independent researcher.

Qualifications

- Minimum Masters Degree in a highly statistical field (i.e., statistics, economics, computer science, mathematics)
- Significant industry experience building predictive models for real applications
- Expert in classic applied statistics (linear models, logistic regression, hypothesis testing, sampling)
- Broad and deep understanding of machine learning algorithms
- Extensive experience with statistical and machine learning packages
- Experience building and evaluating complex statistical predictive models
- Clear thinker and effective communicator
- Ability to create and lead complex projects

Preferred Qualifications

- Expert in mining social network data (or serious interest in becoming one)
- Working knowledge of databases and SQL
- Knowledge/experience with dimensionality reduction, clustering
- Experience with visualizing/producing analytical results
- Substantial programming/scripting experience
- Ability to quickly prototype new ideas
- Experience with systems for manipulating massive data sets (Hadoop, Mapreduce, Hive, Pig)

Personal Attributes

- Someone who has demonstrated success and thrives in an fast-paced entrepreneurial culture
- Has a strong work ethic and is willing to roll-up his/her sleeves as needed
- Is motivational and always leads by example and goes the extra mile
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Strong integrity, always striving for excellence and leading by example
Values creation through innovation
Collaborative team player who can successfully work within a flat organization

Compensation

Commensurate with experience.

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Job Details

<table>
<thead>
<tr>
<th>Job Title:</th>
<th>Systems and Data Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>Full Time</td>
</tr>
<tr>
<td>Location:</td>
<td>New York, NY</td>
</tr>
<tr>
<td>Reference #:</td>
<td>11-01583</td>
</tr>
<tr>
<td>Date Posted:</td>
<td>Start Date: Thu, Feb 17, 2011</td>
</tr>
</tbody>
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Description:
Our client, one of the largest banking and financial services organizations in the world, is seeking a Systems and Data Analyst.

Location: New York, NY

Position: Fulltime

Purpose of the Job:
To analyze current systems and data within US Private Bank and to define coherent solutions and strategies for allowing data across these systems. Whether data at rest (databases) or data in motion (messaging), and to apply those strategies to projects in flight. To evolve our enterprise reporting, business intelligence, and analytics so that business users’ needs are fulfilled. This role is key to our efforts to manage our enterprise data over time and to ensure its integrity, quality, and accuracy. The Systems and Data Analyst participates in projects to provide guidance and specifications at the conceptual, logical, and, if necessary, physical levels and manages the synchronization with the enterprise data dictionary.

Principal Accountabilities:
Help develop and review data models and contribute to the successful development of IT projects.

Lead the development of logical, conceptual, and physical models for projects and align with enterprise views, for both data at rest and data in motion. Review models developed by the project teams and provide validation of the models and ensure alignment with enterprise views. Influence project definition, injecting a broader view, especially regarding enterprise data.

Ensure that solutions being designed and delivered are compliant with the stated requirements and that the scope is controlled and the goals of group systems.

Develop strategies for business intelligence, analytics, and enterprise reporting.
Work with project teams and Change Delivery to identify key data domains and map these domains to reporting classes (reporting and analytics).
Consolidate requirements for reporting, analytics, and business intelligence.
Define the methodology and tooling to help business attain their information needs, via reports and analytics.
Help drive the implementation of such solutions, including the implementation of data marts, enterprise reports, dashboards, etc.

Ensure that the data architecture and solutions are compliant with standards and regulations.

Ensure compliance with internal and external technology standards and regulatory obligations.

Actively manage an enterprise data dictionary which includes a vocabulary, mapping rules, and business rules.

Define data patterns and anti-patterns that are reusable by the project teams.

Define Canonical models that are PB US specific and define rules for mapping to GPB models.

Align data architecture with GPB.

Actively promote the data architecture, accepted best practice techniques, standards and tools to other areas of the Group and external suppliers where necessary.

Actively work with Change Delivery to align the roadmap with key project initiatives.

Incorporate key IT drivers with business drivers.

Provide education sessions, publicity and demonstrations of the chosen architecture.

Reinforce the data security goals.

Develop solutions and strategies to assign proper security attributes to data per our client's data security classifications.

Work with Service Delivery to develop data access guidelines.

Define data masking solutions so that data can be reliably tested even though masked.

Major Challenges:

The jobholder has to have a broad view of the technical solutions from an end to end perspective. He/she is required to understand the business requirements, and at the same time, be technically knowledgeable about the technical solutions available as options to build up systems or solutions to solve the business problem. He/she must have a solid understanding of enterprise data (abstractly and concretely) and its use within enterprise systems. He/she is required to effectively articulate the solutions to project teams and help them craft the system solutions successfully. The solutions and data decisions made will have bearing on local as well as Group systems.

Context of the Job:

The jobholder works with project teams to develop data models and advises on areas that relate to the data architecture of the relevant applications. This is an individual contributor job which offers specialized expertise to the project teams, without the need to managing a team of people. The job must ensure that the technical advice is accepted and used to build application systems or solutions.
that solve the business problems and be compliant with the internal IT technology standards. The job exerts a high degree of influence on the success of IT projects and systems. The position also requires frequent interactions with the business to:
1) understand the business needs and
2) plan IT change in accordance with business change.

Education and Relevant Experience:

MS in Computer Science, Mathematics, or Information Technology
- Strong experience with data modeling (ERI)
- Strong experience with database architectures and vendor solutions (Oracle)
- Strong experience in analysis/design including notations such as UML, BPMN
- Strong experience with enterprise reporting, business intelligence, and data warehousing (ETL, mapping, tooling such as Business Objects/MicroStrategy, DataStage/Informatica)
- Strong analytical skills with experience in documenting technical analysis, impact analysis
- Strong interpersonal and communication skills
- Experience with Development (Java, COBOL, C, etc.)
- Experience with Canonical modeling is a plus

About Mitchell Martin

Mitchell Martin is a staffing and employment solutions firm that represents and services premier talent in both the fields of Information Technology and Allied Healthcare. With over 25 years of experience in placing talented professionals, we pride ourselves in connecting the top talent with the "Perfect Fit" opportunities. Our core values include respect, honesty, quality, service and professionalism. All Mitchell Martin employees are guided by these values with the goal of providing the best possible customer-centric experience for our consultants, employees, and clients. For more information about us and to see our current job postings CLICK HERE.
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Advanced Analytics & Optimization
SPSS Consultant

Job ID: GBS-0300266
Job type: Full-time Regular
Posted: 04-Mar-2010
Job area: Consulting & Services
Job category: IT Specialist
Job role: Data Specialist
Job role skillset: Advanced Analytics

Business unit: Conserv

Travel: up to 75%; travelling 5 days a week, home on weekends

Job description:
This role is responsible for successful delivery of RAC Advanced Analytics solutions and services in a client consulting environment, and is an experienced consultant in the areas of statistics software. Typical tasks include defining the key business problems to be solved, formulating mathematical approaches to solve those problems, gathering of data to solve those problems, and finally developing analysis/drawing conclusions and giving the presentations.

Candidates must live in or be willing to relocate to the Washington DC Metropolitan Area at their own expense. Position requires up to 100% travel.

To ALL recruitment agencies: IBM only accepts resumes from agencies on our preferred supplier list. Please do not forward resumes to our applicant tracking system, IBM employees, or send to any IBM company location. IBM is not responsible for any fees related to unsolicited resumes.

The world continues to get "smaller" and "flatter." But we see now that being connected isn't enough. Fortunately, something else is happening that holds new potential: the planet is becoming smarter. We believe that IBM is uniquely positioned to help because of our depth of resources, our expertise and experience with the most forward-thinking institutions, governments and businesses around the world.

Required:
- Bachelor’s Degree
- At least 3 years experience in SPSS Stats, Modeler, and/or Text Analytics modules to develop solutions to analytic problems
- At least 2 years experience in advanced Excel-based modeling skills
- At least 6 months experience in working as part of a team
- At least 6 months experience in identifying and defining requirements and turning functional requirements into an SPSS-based solution that addresses difficult analytic challenges
- At least 6 months experience in other statistical packages (i.e., SAS or R) and visual basic is a plus
- At least 6 months experience in analytical skills, yet be a strategic thinker who can see the big picture, while managing the details
- At least 6 months experience in interacting with clients to solve their analytics problems and effectively communicate results and methodologies
- Readiness to travel up to 75%; travelling 5 days a week, home on weekends
- U.S. citizenship required

https://jobs3.netmedia1.com/cpijob_summary.jsp?job_id=GBS-0300..
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- English: Basic knowledge

Preferred
- Master's Degree
- At least 3 years experience in advanced Excel-based modeling skills
- Basic knowledge in subjects of mathematics or statistics or operations research or engineering or economics or finance
- At least 1 year experience in working as part of a team
- At least 1 year experience in identifying and defining requirements and turning functional requirements into an SPSS-based solution that addresses difficult analytic challenges
- At least 1 year experience in other statistical packages (i.e., SAS or R) and visual basic is a plus
- At least 1 year experience in analytic skills, yet be a strategic thinker who can see the big picture while managing the details
- At least 1 year experience in interacting with clients to solve their analytics problems and effectively communicate results and methodologies

English: Intermediate

IBM is committed to creating a diverse environment and is proud to be an equal opportunity employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, gender, gender identity or expression, sexual orientation, national origin, genetics, disability, age, or veteran status.
Position: GIS Energy Analyst

Job Location: Morgantown, West Virginia

Position Description: Leonardo Technologies, Inc. (LTI), an energy and engineering small business, is experiencing steady growth and seeks a motivated GIS Energy Analyst to join our team in the Morgantown, West Virginia area. This is a full-time position supporting the US Department of Energy's National Energy Technology Laboratory (NETL).

Requirements: A minimum of 3+ years of professional experience in the environmental, engineering or related field and a working knowledge of Geographic Information Systems (GIS). Energy, especially fossil energy, experience is desired. A thorough working knowledge of enterprise relational databases and experience with desktop and server ESRI ArcGIS software products or a demonstrated ability to learn and use similar applications is required. Experience in developing online web mapping applications using Microsoft Expression Studio, Visual Web Developer, and Silverlight is also preferred.

Excellent writing and research skills are essential. Good communication and interpersonal skills are required as the position requires daily interface with the client. An independent professional who also works well in a team environment is needed. A BS in a related discipline is required, a MS is preferred. Applicants must be a U.S. citizen.

Duties: Conduct literature searches in all energy related fields, research applicable environmental regulations, prepare and deliver formal presentations, develop enterprise and web applications utilizing ArcGIS (or similar software), develop GIS based maps, graphics and applications in conjunction with broader energy analysts working in a team and/or independently. Travel to regional NETL sites as needed for meetings. This job may require regional, national and possibly international travel.

Compensation: LTI pays employees commensurate with their experience, expertise and skills competitively with the regional employment market in conjunction with a desirable benefits package. Benefits include medical, dental, vision and life insurances; paid holidays; accrued personal leave; retirement via a 401(k) IRS “safe harbor” plan; and tuition reimbursement.

How to apply: Please email resume, salary history, and references to arice@lti-global and cndutton@lti-global.com
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Job Description

Smart Grid Senior Software Systems Engineer

Job Number: 110569
Date Posted: 12 March 2010
Funders: Engineering Technology - Smart Grid Design and Development
Business: GE Energy - Headquarters
Career Level: Experienced
Location: Melbourne / Atlanta, Florida, Georgia, United States

About Us

GE seeks people with passion and drive. What do you seek for more than 125 years, GE has been responsive to the needs of its customers. GE people worldwide are dedicated to finding innovative ways to deliver high-quality products and services that help achieve the goals of our customers. Looking for a challenging career where your experience is valued? Come see what you can achieve at a leader in GE Energy!

Role Summary/Responsibilities

Do you know how GE operates and streamlines its processes? Are you seeking the opportunity to work with the best in the field? GE is looking for professionals in Smart Grid Solutions to join our team as Smart Grid Systems Engineers. The GE Smart Grid systems engineers are key members of a highly skilled team of professionals that design and implement Smart Grid solutions worldwide. You will work with a diverse team of experts to develop and implement innovative solutions that meet the needs of our customers.

Job Description:

Job Title: Senior Software Systems Engineer

The Senior Software Systems Engineer will be responsible for:

- Developing and implementing software solutions for Smart Grid systems
- Working closely with cross-functional teams to ensure successful delivery of projects
- Providing technical guidance and supporting project management activities

Requirements:

- Bachelor's degree in Computer Science or a related field
- 5+ years of experience in software development, particularly in Smart Grid technologies
- Experience with development tools such as Git, Jenkins, and Docker
- Proficiency in programming languages such as Java, Python, and C++
- Knowledge of software development methodologies, including Agile and Scrum

About GE:

GE is a global technology and finance leader, with businesses in aviation, healthcare, transport, and energy. We employ over 300,000 people around the world and have a strong commitment to sustainability and innovation.

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GE Job Search: Job Details for Smart Grid Senior Software Systems Engineer - Engineering/Technology in Melbourne / Atlanta, Florida, Georgia...