



Systems Science and Industrial Engineering  
Thomas J. Watson School of Engineering and Applied Science  
Binghamton University (The State University of New York at Binghamton)  
Binghamton, New York 13902-6000

## SSIE Graduate Student Handbook

*This Handbook provides prospective, newly arriving, and current SSIE Department Graduate Students with relevant information during your graduate studies.*

As of Fall 2012

I.	Welcome .....	1
II.	Graduate Student Responsibilities.....	2
	A. General Information .....	2
	B. Meeting Deadlines .....	2
	C. Speaking and Writing English.....	2
III.	SSIE Organization .....	3
	A. Industrial and Systems Engineering.....	3
	B. Systems Science .....	3
	C. Organization Chart.....	4
	D. Office Locations.....	4
IV.	Getting Familiar.....	5
	A. Ambassador Program.....	5
	B. Orientation.....	5
	1) For International Students.....	5
	2) For Domestic Students.....	5
	3) For all Department Students.....	6
	C. Meet the Faculty .....	6
V.	Course Information .....	7
	A. Course Offerings .....	7
	B. Course Numbering .....	7
	C. Graduate Courses Cross-List with Undergraduate Courses.....	7
	D. Non-SSIE Electives for MS & MEng Degrees .....	7
	E. Graduate Distance Learning Program.....	7
	F. Transfer Courses .....	7
	G. General Course Registration Information.....	8
	H. Continuous Registration .....	8
	I. Confirmation .....	8
	J. Program Deadlines.....	9
	K. Graduation Requirements for Degree Completion .....	9
VI.	Requirements for Master Degree .....	11
	A. University Bulletin and Proposed Course of Study .....	11
	B. Full Time Status & Continuous Registration .....	11
	C. Full-Time Status & Immigration Rules.....	11

VII.	Requirements for PhD Degree .....	12
A.	General Information .....	12
B.	Full-Time Status and Continuous Registration.....	12
C.	PhD Advisor & Guidance Committee .....	12
D.	Steps to Complete a PhD .....	13
1)	Completion of Coursework .....	13
2)	Learning Contract.....	13
3)	Comprehensive Qualifying Exam .....	13
4)	Presentation of a Colloquium on Proposed Research .....	14
5)	Acceptance of Prospectus Outlining Dissertation Research .....	14
6)	Submission of Dissertation and Defense .....	14
7)	Five-Year Limit for Admission to Candidacy .....	15
VIII.	Teaching/Research Assistantships .....	16
IX.	Research.....	17
A.	General Information .....	17
B.	Research Areas.....	17
C.	Lab Safety Training.....	17
D.	Research Groups .....	17
1)	Watson Institute for Systems Excellence (WISE) .....	17
2)	External Research Facilities.....	17
a)	SPIR .....	17
b)	IEEC .....	17
c)	CAMM .....	18
X.	Advising.....	19
A.	General Information .....	19
B.	Selecting your Project/Thesis Advisor.....	19
C.	Department Hours and Professor Availability .....	19
XI.	Financial Aid .....	20
XII.	Watson School Graduate Organizations .....	20
XIII.	Resources .....	21

A.	General Information .....	21
1)	Forms .....	21
2)	University Bulletin.....	21
3)	Department Facebook .....	21
4)	Linkedin .....	21
3)	Pods ID .....	21
4)	B-Number.....	22
5)	BU Brain .....	22
6)	BU E-mail.....	22
7)	Blackboard .....	22
8)	Labs and Printing.....	22
9)	Virtual Desktop (VMWare).....	22
10)	MSDN .....	22
11)	SSL VPN .....	23
XIV.	In Summary .....	23
XV.	Contacts .....	24
A.	SSIE Staff .....	24
B.	SSIE Faculty .....	24
C.	Graduate Staff.....	25
D.	Mailing Address.....	25

## I. Welcome

We are extremely delighted to welcome you to the Systems Science and Industrial Engineering (SSIE) Department of the Thomas J. Watson School of Engineering and Applied Science (Watson School) at Binghamton University for graduate studies. It is always amazing to see new students from so many countries, including the United States, arriving each semester. We are pleased with your decision to pursue graduate studies in the SSIE Department, and we extend our heartfelt wishes for you to achieve great success and fulfill your goals during your studies here.

The purpose of this SSIE Graduate Student Handbook (“Handbook”) is to aid you with both your transition to and during your graduate studies within the Department. It is expected that all SSIE students have read and are familiar with its contents. This Handbook is also intended to supplement the existing [Watson School of Engineering and Applied Science Graduate Student Handbook](#), which provides information common to all Watson School students and the [Graduate School Manual](#), which provides information for all University graduate students.

We hope you take advantage of the numerous opportunities and resources available to you in the Department, the Watson School, and the University to meet or exceed your goals. We are pleased you have chosen our Department to accomplish them. Please feel free to ask us any questions throughout your stay here.

Dr. Nagen Nagarur  
Chair & Professor – SSIE Department

Dr. Sarah Lam  
Associate Professor & Graduate Director – ISE

Dr. Harold Lewis  
Associate Professor & Graduate Director – SS

Dr. Mohammad Khasawneh  
Associate Professor & Graduate Director – Executive MS in Health Systems

## II. Graduate Student Responsibilities

### A. General Information

You have the responsibility to work toward successful completion of your degree by demonstrating your efforts in the classroom and in your research. It is expected that you will complete your degree in a timely manner as well. Maintaining a high level of professionalism, self-motivation, engagement, research curiosity, and ethical standards, and meeting the established deadlines are a few of the expectations for you as a graduate student.

You are expected to be knowledgeable of the policies and requirements of your graduate program, Graduate School, and University and you should commit to meeting these requirements, including your teaching responsibilities. You need to comply with the Watson [Academic Honesty Policy](#), institutional safety laboratory practices and research policies, human resources rules and regulations, and all other policies and procedures related to the graduate student program. As a teaching assistant or a research assistant, make certain you discuss policies such as work hours, absences, vacation, etc. with your advisor(s). Though it is your primary responsibility to develop your career following the completion of the degree, you may also seek guidance from your advisor, the Career Development Center (CDC), your project/thesis/dissertation committee, other mentors, and any other resources available across the University for advising you on career plans or opportunities.

While you can find additional information regarding the determination of academic standing for graduate students in the online [Graduate School Manual](#), it is important for you to remember that a cumulative grade point average (GPA) of at least 3.0 is required for a graduate degree. If your GPA falls below a 3.0 at any time, you need to immediately consult with your academic advisor and the Graduate Director to develop plans to improve your GPA.

### B. Meeting Deadlines

Time and schedules are extremely important for you to manage as a graduate student. It is essential for you to learn quickly by managing both. Arriving on time to class, faculty appointments, meetings, seminars, office hours as a teaching assistant, project work, and enrolling in courses, submitting paperwork, etc. all require you to manage your time and your schedule effectively and efficiently. Start now and use the resources on campus that are available.

### C. Speaking and Writing English

The University has a successful [English as a Second Language Program \(ESL\)](#) available to students. Its mission is to provide classes and academic English language support designed to increase non-native English speaking students' English language proficiency and facilitate their academic success at Binghamton University and beyond. If English is your second language, you are strongly encouraged to take advantage of all of the resources offered by the Program. It will build your confidence with the English language and will serve you well in both your academic and personal lives.

All incoming international students are required to take an exam upon arrival to the University. Depending upon your score on this exam, you may be required to take an ESL course(s). Graduate students may earn credit hours (1-4) towards your full time student status.

### III. SSIE Organization

The current graduate degree offerings are listed below. Each Master's degree is linked to its respective Proposed Course of Study which provides more insight into the requirements for each degree. Each Watson School PhD Program requires a Learning Contract. Additional degree requirement information is also found in Sections VI and VII of this Handbook.

#### A. Industrial and Systems Engineering

- [Master of Science - \(MS - ISE\)](#)
- [Master of Science - ISE \(4+1\) - MS - ISE \(4+1\)](#)
- [Master of Science - ISE - Health Systems Concentration \(4+1\) - MS - ISE \(HSC 4+1\)](#)
- [Master of Science - ISE - Health Sys Concentration - MS - ISE \(HSC\)](#)
- [Master of Engineering - Industrial Engineering - MEng - IE](#)
- [Master of Engineering - Systems Engineering - MEng - SE](#)
- [Executive Master Degree in Health Systems - Manhattan](#)
- [PhD - \(PhD-ISE\)](#)

#### B. Systems Science

- [Master of Science - MS - SS](#)
- [Master of Science - SS \(4+1\) - MS - SS \(4+1\)](#)
- [Master of Science - SS - Health Systems Concentration \(4+1\) - MS - SS \(HSC 4+1\)](#)
- [Master of Science - SS - Health Systems Concentration - MS - SS \(HSC\)](#)
- [Executive Master Degree in Health Systems - Manhattan](#)
- [PhD - \(PhD-SS\)](#)

Other programs available to you include:

An Electronics Packaging Certificate is also offered through the Watson School as an optional sub-specialization graduate credential. See this website for additional information: <http://watson.binghamton.edu/level3/packaging.htm#over>

## C. Organization Chart

The SSIE Department is one of six academic departments in the Watson School. Figure 1-1 helps you see how your program fits into the overall academic organizational structure.

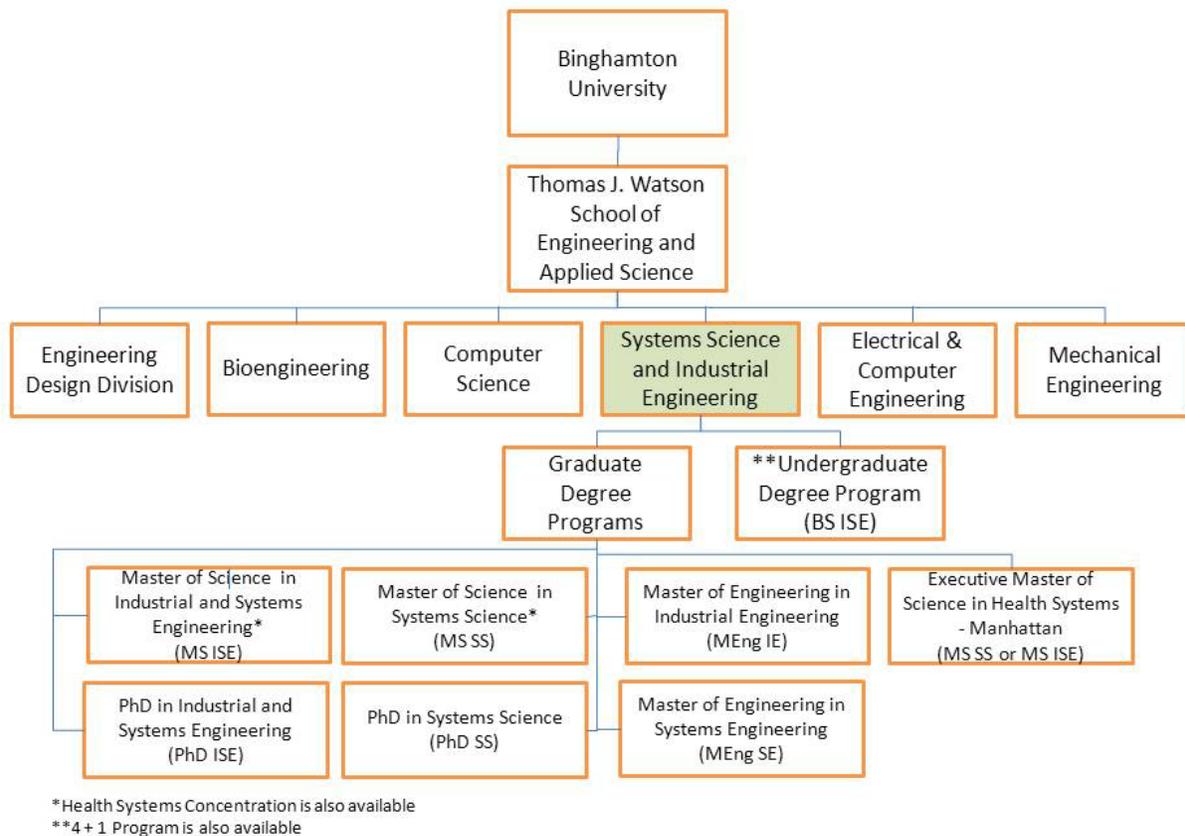


Figure 1-1: Organization Chart

## D. Office Locations

The Department offices are located on the main campus within the “BU Brain” in the Engineering Building (EB) on East Drive in the L-pod and K-pod. The Dean’s Office is located just across the street from the main campus on Murray Hill Road in the Engineering & Sciences (ES) Building. Classes are held in several of the buildings on campus. Here is a link to the [University map](#) to help you get acclimated to the campus layout. While the campus may look confusing and large, once you are here, you will see how easy it is to find your way around.

## IV. Getting Familiar

Getting familiar with and introducing yourself to new people and a new environment are extremely important to enhance your skills and knowledge in your new graduate life and to ease the transition from undergraduate studies to graduate studies. The University's culture may also differ from your undergraduate studies, your family and/or perhaps your country. To avoid or minimize confusion for you, some programs outlined below are designed to support you with socializing and familiarizing yourself for your smooth transition to graduate studies here.

### A. Ambassador Program

During the past several years, the Department has taken an informal approach to connecting newly admitted students with current students during the summer and first semester to make the transition a smooth one. In 2012, we are in the process of formalizing the program. If you are interested in learning more about this program and becoming an ambassador for newly admitted students, please inform your Graduate Director or the Department Secretary, Aneesa Thomas, for more information. The roles and responsibilities for serving as an ambassador to the program include the following:

- Send email to the student(s) assigned to you (tell them about your position and research area you are working on).
- Answer the questions received from the students within one or two business day.
- Attend the ambassador orientation and meetings related to this role.
- Attend the Department's Orientation Program, when requested.

### B. Orientation

The Graduate School has a [virtual online orientation](#) for all new graduate students. This orientation is required for all fall and spring degree-seeking, matriculated students. Not completing the required modules will result in a hold on your student account at the end of your first semester. You will be unable to register for future courses until the modules are completed online. The required modules include:

- Virtual Orientation- general overview for students
- Professional Ethics – learning module
- Graduate-level Writing Skills – learning module

#### 1) For International Students

The [International Students and Scholars Services \(ISSS\)](#), also referred to as "I triple S", is one you want to become very familiar with. You will see that there is an [orientation program](#) designed specifically for you. The orientation program will help you begin your graduate studies and to familiarize with the University's culture. The Program provides you with essential information such as US immigration rules, University regulations, academic success, as well as an opportunity to interact with graduate students from different countries and different programs, campus tours, formal and informal interactions with University staff and faculty, plus much more. Please take advantage of all of the services they have to offer.

You will also be scheduled to attend an SSIE Orientation Program with your Program's Graduate Director.

#### 2) For Domestic Students

You will be scheduled to attend an SSIE Orientation Program with your Program's Graduate Director.

### **3) For all Department Students**

Before the first week of classes of every academic year, the SSIE Department conducts a new student orientation program which is beneficial for all new and transferring graduate students. The purpose of this meeting is to familiarize you with the SSIE Department. This program is mandatory for all new graduate students.

If you are a transfer student already accustomed to University life, this orientation is also required and helpful to you to become acquainted with the SSIE Department and to meeting other graduate students. You also have an opportunity to meet and converse with the Program Advisors.

### **C. Meet the Faculty**

“Meet the Faculty” is an event usually held within the first few weeks of the semester. You will be introduced to all faculty members who provide a brief outline of their research interests and course(s) they generally teach. New and returning students are encouraged to attend this event to meet and interact with other students, to interact with faculty, and to converse and ask questions in an informal, social setting.

## V. Course Information

### A. Course Offerings

The Department offers a range of graduate courses. A [“Tentative Plan of SSIE Graduate Course Offerings”](#) showing when they are likely to be offered is also made available. Please note that:

- A relatively small portion of the total course list is offered each academic semester;
- Courses are usually offered once a year (either fall or spring semesters), or once every two/four years;
- Courses are offered in accordance with the availability of full-time or adjunct faculty with expertise in the field and the need for the course;
- Additional courses are offered when there is a perceived need, and the requisite minimum enrollment (typically ten or more students) is satisfied;
- The Department generally does not offer courses during the summer; however, there is the option of selecting a summer course from another department or obtaining approval for an independent study course, pending the approval of your Graduate Director.

### B. Course Numbering

Graduate courses at the Master's and PhD levels are numbered at the SSIE 500 level and SSIE 600 level. The SSIE 600 level courses are more advanced graduate courses and typically have a 500-level course as a prerequisite. All course descriptions are located in the University's [Bulletin](#).

### C. Graduate Courses Cross-List with Undergraduate Courses

Some of the SSIE 500 level courses are cross-listed with ISE 400 level courses. These cross-listed courses require graduate students to complete additional work beyond that required of the undergraduates. The following restrictions apply to cross-listed courses: Any graduate student who may have taken an undergraduate course that is cross-listed with a graduate course will already have earned the credit for the undergraduate course. Please note that the student will not be eligible to earn graduate-level credit for the cross-listed graduate course at a later date and will not be eligible to take the course again at the graduate level.

### D. Non-SSIE Electives for MS & MEng Degrees

Registration in non-SSIE courses may be subject to requirements and/or restrictions of the offering department. You will need to address these issues with the offering department. It is strongly recommended that you work directly with your advisor or the Graduate Director before registering for a non-SSIE elective to ensure that your advisor (or the Graduate Director) believes it will enhance your graduate studies. In addition, if a non-SSIE graduate course has a reasonably equivalent SSIE course, then the out-of-department course may not be allowed as an SSIE elective. Generally a maximum of two (2) non-SSIE courses may be accepted.

### E. Graduate Distance Learning Program

Although most of the graduate courses are taught on campus, some are offered through [Watson's Graduate Distance Learning Program - EngiNet](#). Course lectures are recorded live on-campus and digitally encoded for the Internet. The distance learning student can stream the lectures weekly on-line. Samples of courses that have been offered as a part of this program can found here: <http://www2.binghamton.edu/watson/enginnet/courses-sp10.html>

### F. Transfer Courses

A maximum of two courses taken by a graduate student outside Binghamton University may be accepted as valid transfer courses into the master's programs. Transfer courses require approval by the Program's Graduate Director and the Graduate School. The approved transfer courses are counted as

non-SSIE courses. Transfer of courses for PhD students is not applicable since the requirement for the PhD is to complete 24 residency credits at Binghamton University.

## G. General Course Registration Information

As a new student, you can register for courses by first discussing them with the Program's Graduate Director and other faculty during your initial orientation. All continuing students can pre-register for fall or spring semesters in the preceding semester the course is offered, i.e., pre-registration for the fall semester is open during the spring semester and vice versa. For summer and winter sessions, registration is made available 1-2 months prior to the start of the semester. Information related to course registration could be found at: <http://www2.binghamton.edu/registrar/students/course-registration/index.html>

Here is another Graduate School website that will be helpful to better understand the importance of total number of credits, continuous registration, and the online tools available to you related to this topic: <http://www2.binghamton.edu/grad-school/new-and-current-students/new-graduate-students/registration.html>

For master degree program students, please remember to meet with your Graduate Director and bring your Proposed Course of Study form with you to ensure that you are progressing through the program appropriately.

## H. Continuous Registration

Once enrolled, you are expected to continuously progress towards your graduate degree. You need to maintain continuous registration for all fall and spring semesters for a minimum of one (1) credit hour until you graduate. If you need to register for just one (1) credit, follow these basic guidelines:

- If you are a masters' student and course complete with:
  - a thesis, register for SSIE 599,
  - an ISE project, register for SSIE 598, or
  - an SS project, register for SSIE 595.
- If you are in a doctoral program and course complete or ABD, register for SSIE 699.
- If you are graduating at the end of the summer semester, register for at least one (1) credit hour in the summer session.
- If you are planning to be absent or withdraw from all the courses for a semester or two, then register for one credit of continuous registration (SSIE 700).
- And finally, you should remain registered if you are going off campus to fulfill an internship related to your degree requirements. Please make certain you review your plans with and receive approval from your academic advisor.

Complete information related to continuous registration, leave of absence, incomplete grades, academic standings, transferring graduate credits, etc., can be found at:

<http://www2.binghamton.edu/grad-school/manual/enrollment.html#continuous>

## I. Confirmation

At the beginning of each semester, you will need to confirm your enrollment through BU Brain. Failure to confirm enrollment will result in the cancellation of your courses irrespective of the status of your

semester bill payment. More information related to confirming enrollment is at: <http://www2.binghamton.edu/registrar/students/course-registration/confirmation-enrollment.html>

## J. Program Deadlines

While there are many deadlines you will encounter as a student, please make certain you keep track of your Course Registration and Graduate Program deadlines:

<http://www2.binghamton.edu/registrar/students/course-registration/index.html>

<http://www2.binghamton.edu/grad-school/new-and-current-students/graduating-students/index.html>

Please note that each semester the tuition refund deadline and drop/add deadline do not coincide. You may be responsible for paying a portion of the tuition for courses you change after the established deadlines. A link to the Tuition Refunds/Adjustment web page is included here for your convenience <http://www2.binghamton.edu/student-accounts/tuitionadjustments.html>. This is yet another reason for you to pay close attention to schedules and deadlines!

## K. Graduation Requirements for Degree Completion

Early in the semester in which you are planning to graduate it is extremely important for you visit the Graduate School's [Graduating Students website](#), which includes important information regarding:

- Degree completion deadlines - if you miss these deadlines you can't graduate that semester!
- Commencement information
- Thesis/Dissertation preparation & submission information - these are the requirements you must follow to submit your MS thesis or PhD dissertation
- An MS Thesis or PhD Dissertation must be submitted to and defended in front of your committee
- An MS project report must be submitted and presented in front of your committee

Timing for MS Thesis or PhD Dissertation Completion: Please note that you must allow ample time before the deadlines posted by the Graduate School for submission of your thesis/dissertation in order for:

- a. Your Committee to read it,
- b. You to have timely completion of your thesis/dissertation defense, and
- c. Timely completion of any revisions requested by your Committee.

Very early in the process, you should consult with your academic advisor to understand the timing requirements for you.

Timing for MS Project Completion: Please note that you must allow sufficient time before the deadlines posted by the Graduate School for submission of your Recommendation of Degree form in order for your advisor and committee to read and approve your project report and presentation. It is very likely that your revisions will need to be made prior to approving your report, so please schedule your time accordingly.

Completion of a graduate degree requires submission of:

- a. The Graduate Application for Degree (GAFD). You must complete this online early in the semester in which you plan to graduate ([see the Graduate School's deadlines for the appropriate date](#)). This serves as a declaration of intent to graduate and an application for

degree completion. If you complete the GAFD but fail to graduate, you must submit a new GAFD during the semester in which you will actually graduate.

- b. A completed [Proposed Course of Study](#). This is the document you have been using throughout your Program when talking with your academic advisor. Please note that this must include the appropriate signatures as indicated on the form.
- c. A Recommendation for Award of Degree Form. This is a paper form that is available from the Watson School's Graduate Coordinator's office. For MS students, this form requires your advisor's signature and the SSIE Program's Graduate Director signature. For PhD students, this form requires your committee's signatures and the SSIE Program's Graduate Director signature.

Please note: Incomplete grades, missing grades, and a cumulative GPA of less than 3.0 will prevent you from graduating.

## VI. Requirements for Master Degree

### A. University Bulletin and Proposed Course of Study

Master Degree students are encouraged to read the University Bulletin and the Proposed Course of Study documents:

1. The [University Bulletin](#) is located on the University's website. This link is based on the current academic year. When you use the Bulletin, please make certain you are using the appropriate academic year.
2. The [Proposed Course of Study](#) documents are available on the Watson Advising website and the Department's website. Since all of the Proposed Courses of Study for the Master Degrees are on one web page, please make certain you select the one you have been accepted into. Please note that it is in your best interest to meet with your advisor prior to registering for the next semester's courses to ensure that you are on track for your Program. You will want to do this if you have selected the thesis option or the project option.

### B. Full Time Status & Continuous Registration

As an MS student, if you have completed fewer than 24 graduate credits\* at the University, you must enroll for 12 graduate credits to maintain full-time status. Once you complete at least 24 graduate credits\* at the University, then you need to enroll in only nine\*\* (9) graduate credits to maintain full-time status. However, once you have completed all of your course work and will only be registering for thesis or project credits you may be certified for full-time status despite registering for fewer than nine (9) credits. You will use either the form for full-time certification as a funded student or non-funded student. The [Graduate School's Full-time Certification web page](#) provides you with the detail related to this topic.

\* Only completed courses count towards these 24 credits –Incomplete (I), Failure (F), and Unsatisfactory (U) grades do not count towards these 24 credits.

\*\*Please note that if you are in the 4+1 or 3+2 Master's Program, you are required to maintain twelve (12) credits in the fifth year of your studies to maintain your full time status.

All students who have been admitted into a degree-granting program must maintain continuous registration each semester for a minimum of one (1) credit hour. Refer to Page 8 to determine the course you need to enroll in. If you do not maintain registration, your student status is severed and you may not return unless you reapply for admission and pay a new application fee. Students who are readmitted are required to register and pay for one (1) credit for each semester they have not registered, plus one (1) credit for the semester they re-enter, up to a maximum of four credits. You are not required to maintain matriculation during the summer unless you intend to complete your final degree requirements during this period. However, students graduating in the summer must be registered for at least one (1) credit in one summer session.

### C. Full-Time Status & Immigration Rules

Immigration rules require that international students maintain full-time status. Please be aware that if you are an international student who withdraws from a course without replacing those credits with some other course, then you risk being in violation of immigration rules. If that occurs, please immediately see the [International Student & Scholar Services](#) for help in these matters.

## VII. Requirements for PhD Degree

### A. General Information

The PhD program needs to be designed to meet the needs of each student through an individualized learning program. The program requires a minimum of eight (8) courses beyond the Master's degree (including at least three 600 level courses). To meet the Residency Requirement, you must complete a minimum of twenty-four (24) course-credits at the University (a few of which could be independent studies if that is acceptable to your advisor).

### B. Full-Time Status and Continuous Registration

To maintain full-time status as a post-MS PhD student you must enroll in a minimum of nine (9) graduate credits. A new PhD student who has not yet provided the graduate school with an official copy of a transcript showing the award of an MS degree must register for 12 credits to be full-time. Once a PhD student has completed all requirements except for defense of and submission of a dissertation only one (1) credit of registration is needed for full-time status as long as the full-time certification form has been completed. The [Graduate School's Full-time Certification web page](#) provides you with the detail related to this topic.

All students who have been admitted into a degree-granting program must maintain continuous registration each semester for a minimum of one (1) credit hour. Refer to Page 8 for the course you need to enroll in. If you do not maintain registration, your student status is severed and you may not return unless you reapply for admission and pay a new application fee. Students who are readmitted are required to register and pay for one (1) credit for each semester they have not registered, plus one (1) credit for the semester they re-enter, up to a maximum of four credits. You are not required to maintain matriculation during the summer unless you intend to complete your final degree requirements during this period. However, students graduating in the summer must be registered for at least one (1) credit in one summer session.

### C. PhD Advisor & Guidance Committee

Your research advisor is central in directing your development. Upon admission to the doctoral program, you will have the Program's Graduate Director as your advisor until an advisor is identified on the [PhD Principal Advisor/Guidance Committee Form](#). As the initial academic advisor, the Program's Graduate Director is responsible for (a) explaining the Watson School regulations governing the doctoral program; (b) assisting you in establishing a course of study and finding an advisor; and (c) assisting you in forming a guidance committee. **These actions should be completed during the first semester in residence.**

As soon as you find a faculty member to serve as your Principal Advisor, you and your advisor should identify faculty members to serve on your guidance committee. Initially, the guidance committee must have a minimum of three members with a minimum of two members (including the Principal Advisor) from the Department. Each of these members is expected to take an active role in supervising your development. Members in addition to those mentioned above can be added to enhance the committee, and a recommendation for an Outside Examiner will need to be made to the Graduate School so that the outside person can be appointed before dissertation defense (see more about the outside examiner in the section below on the Dissertation).

When a proposed committee has been identified, the names and signatures are submitted on the [Principal Advisor/Guidance Committee Form](#) to the Program's Graduate Director. Once approved by the Program's Graduate Director, the form is forwarded to the Graduate Coordinator in the Watson School. After it is reviewed and approved by the Graduate Coordinator, the form is sent to the Graduate School where it undergoes its final review and approval. Review of the proposed guidance committee is very

thorough since the guidance committee monitors your academic progress. When the guidance committee is approved, the form will be placed in the student's permanent folder. Any subsequent changes made to the membership of the guidance committee must be documented on a new [Principal Advisor/Guidance Committee Form](#).

## D. Steps to Complete a PhD

The major steps in the completion of the PhD program include the sequence described in detail below. Although the presented order is typical, it is not necessary; however, only small deviations from this sequence are possible.

- completion of coursework
- satisfaction of the \*learning contract,
- \*proficiency in teaching and residence requirements,
- satisfaction of the comprehensive qualifying requirement,
- presentation of a colloquium on proposed research,
- acceptance of a prospectus outlining dissertation research,
- submission of a dissertation, and
- defense of a dissertation at oral examination.

\*The student prepares a [learning contract](#), in which a program of study is specified, including the major area of research, additional course requirements, teaching requirement, evaluation procedures, and the form of the comprehensive examination. Although the [learning contract](#) may be modified as the research interests of the student develop, to assure competence and depth in the major area and breadth in relevant disciplines, each modification must be approved by the Guidance Committee, and must be properly documented.

### 1) Completion of Coursework

You are required to complete a minimum of 24 credits of course work (including at least 3 courses at the 600 level) beyond a Master's degree. These 24 credits can include regular courses and independent study courses; pre-dissertation and dissertation credits don't count towards this requirement. The specific selection of courses to be taken must be outlined in the learning contract.

### 2) Learning Contract

You should start to work immediately (even prior to taking the qualifying exam) with your advisor to develop a [learning contract](#). The learning contract should be completed as early as possible in your PhD studies. The purpose of the learning contract is to define the knowledge and skills required in order to pass the comprehensive examination. Toward that, the learning contract will identify core courses and concepts, which must be mastered in order to provide breadth of background, as well as specialized courses and concepts that are relevant to the proposed area of research. The learning contract may be modified later if additional knowledge is required, or if the field of research is changed. Once completed, a copy of the learning contract, with signatures indicating approval of the Guidance Committee, is placed in your student file in the Graduate Coordinator's Office.

### 3) Comprehensive Qualifying Exam

You are encouraged to attempt this examination as early as possible in your program, preferably after you have completed your first three semesters. The comprehensive qualifying exam is used to assess the background of you as a beginning PhD student and identify any areas of weakness that should be addressed early in your PhD program and is scheduled based on the input and guidance of your Guidance Committee. On the comprehensive qualifying examination, you must demonstrate quantitative skills and subject knowledge within key areas of SSIE.

The results from the examination are reviewed by your advisor with the Guidance Committee, and you are given an honest assessment of your progress toward your PhD. The possible recommendations of the Guidance Committee are: (1) satisfactory progress has been demonstrated; (2) the examination should be re-taken in accordance with the Graduate School policy; (3) you should withdraw from the PhD program.

#### **4) Presentation of a Colloquium on Proposed Research**

Upon completion of the comprehensive qualifying examination, you will prepare a written prospectus that identifies: (i) the research topic to be undertaken, (ii) the relevance of the results-to-date, and (iii) a proposed approach for completing the dissertation. The prospectus is presented and defended in an open colloquium. Upon acceptance of the prospectus by the Guidance Committee, a copy is filed with the Watson School Graduate Coordinator.

#### **5) Acceptance of Prospectus Outlining Dissertation Research**

After successfully completing the comprehensive qualifying examination, and any additional requirements, you can be admitted to candidacy for the doctorate. The Graduate Office is notified of the satisfactory completion of the comprehensive qualifying examination of your admission to candidacy on the [Recommendation for Admission to Candidacy for Doctoral Degree Form](#). Within six months after being admitted to candidacy (ABD), the student should submit an approved prospectus to the Guidance Committee and to the Watson School Graduate Coordinator. Note that you are required to defend the dissertation within five years of admission to candidacy.

(Note: Although not actually required, it is quite common and often useful to hold one or more Dissertation Research Progress Review Meeting during the time between the colloquium and the defense.)

#### **6) Submission of Dissertation and Defense**

With the guidance of the dissertation advisor, you complete the research and prepare a dissertation, which is an original written contribution demonstrating originality and competence in the chosen field of research. The Guidance Committee has direct charge of all matters pertaining to the dissertation, which must have the Committee's unanimous approval before arrangements are made for the final examination for the degree. The dissertation is to comply with the format and filing requirements set forth in the [Graduate School Manual](#).

Upon a recommendation from the Department, an [Outside Examiner](#) may be added to the committee. Please see the Graduate School Manual for more information regarding this topic. The Outside Examiner reviews and participates in the dissertation defense with the Guidance Committee.

After distributing the dissertation for review, an oral defense of the PhD dissertation is scheduled. You are required to present an oral defense of your dissertation in an open colloquium. Upon satisfactory defense of the dissertation, the Program's Graduate Director submits a signed copy of the Recommendation for Award of Doctoral Degree Form to the Graduate Coordinator in the Dean's Office.

Note that before signing the Recommendation for Award of Doctoral Degree Form, the Program's Graduate Director needs to ascertain that all the necessary milestones defined above for the completion of the doctoral degree, including the learning contract, coursework, comprehensive qualifying examination, presentation of prospectus, and admission to candidacy have been passed satisfactorily. After verification of completion of the program of study, the Graduate Coordinator forwards the recommendation form to the Graduate Office. Note that all the forms and other paperwork for the graduate program are available in the Watson School Graduate Advising Office.

## **7) Five-Year Limit for Admission to Candidacy**

As stated in the Graduate Student Manual:

A student in a doctoral program must be admitted to candidacy within five years of admission to the Graduate School if entering directly into a doctoral program or within five years after award of a master's degree at Binghamton University. The following clarifications to this policy should be noted:

- If a student is granted a leave of absence, the period of the leave is not counted against the time limit to be admitted to candidacy.
- If a student earns a master's degree at Binghamton University and then does not continue immediately for the doctoral degree, the five-year limit begins when the student is readmitted to the University for doctoral studies.
- A student may petition for an extension of the time limit by submitting a request to the director of graduate studies in his or her program unit. The director of graduate studies, if he/she endorses the request, then forwards it to the Graduate School for final action by the Vice Provost and Dean of the Graduate School.

## VIII. Teaching/Research Assistantships

Every academic year many of our first year graduate students (Master and PhD students) are financially supported by funding opportunities in the form of Teaching Assistantships (TAs) or Research Assistantships (RAs). Responsibilities of these positions include assisting professors with instructional responsibilities, conducting discussion sections, grading, aiding faculty in their research work, etc. These will help you lessen your financial burden and also with real time work experience with other professionals, faculty, and graduate and undergraduate students. The assistantships typically consist of a stipend along with a tuition waiver. These positions (TAs and RAs) are generally awarded after a review of applicants based on the following criteria:

- Outstanding undergraduate record,
- GRE score, and
- Fit of background to existing research

Note that a TA appointment is not indefinitely renewable; typically, the Program will support a Master's student with a TA for up to one academic year. In special cases, PhD students may receive a TA award for two academic years. Maintaining a TA appointment requires maintaining an excellent academic record after an award has been made.

An [online orientation program](#) for new Teaching Assistants is available each fall and includes a series of six (6) modules and two books. It is required for all new TAs.

As a result of faculty and WISE projects, there are generally a significant number of Research Assistantships available. Students can be appointed to these positions at the beginning of the semester or throughout the academic year. Assignments may be made outside of the University setting. Again, all of this is project-dependent. If you are interested in a Research Assistantship position, please make certain you provide an up-to-date resume to the Department Secretary, Aneesa Thomas, who maintains a file of interested students. There is no application process required for these positions.

## IX. Research

### A. General Information

Research is a critical and key component to the success of the University and to our Department. You will want to familiarize yourself with the campus-wide research efforts by viewing this website: <http://research.binghamton.edu/>. You also want to become very familiar with all of the research efforts within the SSIE Department.

### B. Research Areas

SSIE faculty members have their focus on numerous research areas and most of the graduate students receive mentoring in these areas with world-class technical support. These research areas include, but are not limited to the areas shown in the following research matrix:

<http://www2.binghamton.edu/ssie/research/matrix.html>

There are also a few labs associated with or established for the research work being conducted. More information related to the labs can be found at: <http://www2.binghamton.edu/ssie/research/labs/>. In addition, there are a few labs available for students in the newly constructed Engineering Sciences building.

### C. Lab Safety Training

The Watson School and SSIE Department recognize that training all personnel and carefully applying sensible practices are important for a safe working environment. The Office of Environmental Health and Safety is available to provide required general training to departments. More information related to Lab Safety training is located at: <http://www2.binghamton.edu/ehs/lab-safety/index.html>.

### D. Research Groups

There are research groups within the Department that may be available to you as a graduate student. It is important for you to become familiar with and take advantage of the many opportunities afforded to you in the research areas.

#### 1) Watson Institute for Systems Excellence (WISE)

WISE is an institute of advanced studies at Binghamton University. WISE is an internationally known organization assisting industry with an economical approach and at the same time working concurrently boosting the competitiveness of industry. Many Master and PhD level students, along with a few undergraduate students, are brought together with federal and industry sponsors to conduct innovative industry-based research. WISE also provides students with real-life experiences working closely and making helpful contacts with the industry, at the same time to collaborate strongly with distinguished faculty on cutting-edge research. More information about WISE is located at: <http://www.binghamton.edu/watson/wise/>.

#### 2) External Research Facilities

Information regarding external research facilities that the Department collaborates with is located by going to the links provided below:

- a) **SPIR:** More information related to SPIR (Strategic Partnership for Industrial Resurgence) is at: <http://www.binghamton.edu/watson/spir/>
- b) **IEEC:** More information related to IEEC (Integrated Electronics Engineering Center) is at: <http://www.binghamton.edu/ieec/>

- c) **CAMM:** More information related to CAMM (The Center for Advanced Microelectronics Manufacturing) is at: <http://www2.binghamton.edu/camm/>
  
- d) **CASP** More information related to CASP (Center for Autonomous Solar Power) is at: <http://www2.binghamton.edu/casp/>

## **X. Advising**

### **A. General Information**

Graduate advising within the Department is carried out at the following levels:

- 1) For matters pertaining to appropriateness of course structure, interpretation of certain rules (at the Watson and Departmental level), and other structural issues, you may consult the Program's Graduate Director and/or the Watson School Graduate Coordinator.
- 2) For matters pertaining to University rules and policies, you may consult the Watson Graduate Coordinator or the University Graduate Office directly.
- 3) For matters pertaining to financial aid and scholarships, you may consult the Department Chair and/or the Program's Graduate Director.
- 4) For all matters pertaining to graduate research (dissertation, thesis, or project), and associated processes such as selection of coursework and evaluation committees, you must consult your thesis/project advisor. Note that the thesis/project advisor is the person with whom you need to establish a close professional relationship, and interact with frequently.

### **B. Selecting your Project/Thesis Advisor**

The Department has many faculty members who are available and eager to serve as your graduate advisor. Selecting an advisor is very important to you. Before deciding on your thesis, project, or dissertation topic and advisor, it is highly recommended that once you believe you have decided upon your research interest to converse with other graduate students and faculty members working in the same research area, research group or any affiliated research organizations. You can also speak with the Program's Graduate Director and/or Department Chair, who can serve as valuable resources for advice about the path you are following to launch your career. It is highly recommended that you select your faculty advisor and seek approval by the end of your first semester, but no later than the beginning of your second semester.

#### **Master Students – Project or Thesis**

When considering your Master's Degree, give serious consideration to what your future plans are for obtaining your degree and the amount of time you want to spend obtaining it. This should help you decide on pursuing either a thesis or a non-thesis degree.

If your goal is to work in industry and not continue for a PhD, then your best option may be to obtain a non-thesis degree. This degree allows you to replace the thesis requirement with two additional elective courses and the completion of a project, as approved by your faculty advisor.

### **C. Department Hours and Professor Availability**

During the semester, the Department is open from 8 am until 5 pm. Faculty office hours are located at their respective office doors or at the Department's main entrance in the "L" pod in Engineering Building.

## **XI. Financial Aid**

For detailed financial aid information visit the Graduate School's web site at: <http://www2.binghamton.edu/grad-school/prospective-students/cost-aid-funding/index.html>. A variety of sources are outlined to help with your financial needs.

## **XII. Watson School Graduate Organizations**

Student activities help you make the most of your University experience. We encourage you to get involved in at least one organization during your stay here. We strongly encourage you to gain the experiences, knowledge and leadership opportunities provided by organizations. For more information on student organizations associated with the Department and other departments within the Watson School, please follow the link provided below:

<http://www2.binghamton.edu/watson/about/clubs-and-orgs.html>

Being part of organizations associated with other departments will also help those of you involved in multi-disciplinary research, so you can interact with people from your areas of research and also participate in related activities.

## XIII. Resources

### A. General Information

Much of your interaction for course enrollment, course confirmation, and general communication is based on technology. Please familiarize yourself with the following:

#### 1) Forms

There are different procedures for you to follow from the beginning of your program until the day of graduation. Please make certain you read emails sent to you and follow the instructions to avoid any confusion or delays. Forms required for both the Masters' and Doctoral programs, are on the SSIE Department website at: <http://www.binghamton.edu/ssie/grad/forms.html>, the [Watson Advising website](#) and the [Graduate School's website](#).

#### 2) University Bulletin

The [University Bulletin](#) provides a wealth of information about the University, the Department and its programs, as well as a list and description of the many courses offered by the University. You will want to familiarize yourself with using the Bulletin, which is updated each academic year.

#### 3) Department Facebook

Important updates and notifications related to jobs, interns, accomplishments, etc., are posted by the Department on the [SSIE Department Facebook](#) Page. It is a good idea for you to "like" this page to stay current with the events and notifications.

#### 4) LinkedIn

The Department has also created [LinkedIn](#) page. For professional networking purposes, you may want to consider creating a LinkedIn page and linking yourself to the Department's Group.

#### 3) Pods ID

The Pods ID is a major identifier used for many campus technological and network resources. It is:

- Binghamton University's official email ID: e.g., [jsuny@binghamton.edu](mailto:jsuny@binghamton.edu)  
**Note:** Your email ID is the same as your Pods ID, but your email password is maintained by Google. See question [What electronic mail environment is used?](#) for more information.
- Login ID for public and multimedia classroom computers.
- Login ID for BU wireless network. (SSID: busecure)
- Login ID for Blackboard <http://blackboard.binghamton.edu>
- Login ID for BUbrain <http://bubrain.binghamton.edu>
- Login ID for SSL VPN: You can use a web browser (IE, Firefox, Safari, Opera) to connect to the campus network from home or on the road. The url is <https://ssl.binghamton.edu>. The Pods ID and password are used to authenticate to this resource.
- Login ID for Virtual Desktop at [bingview.binghamton.edu](http://bingview.binghamton.edu). For more information on Virtual Desktop, please visit: <http://its.binghamton.edu/virtual-desktop>.
- Login ID for off-campus access to Library resources: <http://library.binghamton.edu/>

#### **4) B-Number**

This is the primary identification number for students, faculty and staff. It is used in lieu of your social security number. Except for employment purposes, you should not be asked or you should not provide your social security number. If you forget your B-Number, you can look it up online. Using your PODS ID, log into [BU BRAIN](#) and click on "View Your B-Number."

#### **5) BU Brain**

The [BU Brain Self Service](#) is used to register for classes, view grades, view unofficial academic transcripts, request official transcripts, print class schedules, view your student account, view holds, view and update personal information, view and accept financial aid awards, plus more. Simply use your PODS user ID and password and login to [BU Brain](#).

#### **6) BU E-mail**

You are provided with an official e-mail account that is powered by Google. This address will be yours as both a student and an alumnus. Please read the University's Computer and Network Usage Policy as well as the other information [on this page](#).

#### **7) Blackboard**

This tool is used by faculty for the different courses you will be taking. You are able to view your semester progress, assignments, projects, exam grades, and can also communicate with class students/project groups' regarding courses, to submit your assignments, etc. To login to your [Blackboard](#) simply enter your Pods ID.

#### **8) Labs and Printing**

There are two labs (P27 and E2 labs) available for use by students of SSIE Department. P27 lab on the third floor of Engineering Building is primarily for the graduate students and E2 lab is dedicated to undergraduate students. Access for these two labs can be obtained by contacting Ms. Aneesa Thomas. Graduate students can also use the E2 lab, if needed. Both labs have computers with all the software required by under-graduate and graduate students during their course of study. The P27 lab also has a printer that is free of charge. It is highly recommended that you not print large quantities of material to conserve resources for you and your fellow students.

#### **9) Virtual Desktop (VMWare)**

To access software required from remote places or even off campus from your desktop, [VMWare](#) is available. Please note that for now, this only works with the Internet Explorer browser, and is also available for Mac Operating Systems.

#### **10) MSDN**

All students enrolled in a Watson School course for credit qualify for to the Watson School MSDN Academic Alliance program. There they can download fully licensed and function version of Microsoft's Operating Systems and applications including Microsoft Project. The web address for this site is: [http://msdn04.e-academy.com/elms/Storefront/Home.aspx?campus=binghamton\\_watson](http://msdn04.e-academy.com/elms/Storefront/Home.aspx?campus=binghamton_watson)

The username is the student's campus email address. To retrieve the password, select the "I've forgotten my password!" option and enter your campus email address as your username. The site will email the password to the address provided.

After retrieving your password, the first step to accessing your account is to register it. Using the link above, select the "Your Account" tab then select the "Register" button and follow the screen prompts. Accounts only have to be registered once.

Please note that downloading software via MSDN is a privilege which is only active while you are a current and enrolled student within the Watson School.

#### **11) SSL VPN**

The [SSL VPN](#) is a secure and safe way for off-campus users to connect to on-campus network resources such as email, network data drives and other network resources. To connect to the SSL VPN, point your web browser to [ssl.binghamton.edu](http://ssl.binghamton.edu) and login using your PODS ID and password.

### **XIV. In Summary**

By using this Handbook as well as the existing [Watson School of Engineering and Applied Science Graduate Student Handbook](#), the [Graduate School Manual](#), and the [Binghamton University website](#) you now have a wealth of information available to you. Please remember that all of us are here to help you be successful in your endeavors. Please stop by our office or send us an email with any open issues you have during your studies here as well as an alumnus.

Thank you!

## XV. Contacts

### A. SSIE Staff

#### **Aneesa Thomas**

Department Secretary

Email: [adavern@binghamton.edu](mailto:adavern@binghamton.edu)

Phone: 607-777-6510 | Fax: 607-777-4094

**Note:** Most of the important emails and notifications will be sent from the above contact, Ms. Aneesa Thomas with this email address: [adavern@binghamton.edu](mailto:adavern@binghamton.edu)

#### **Marge Swiercz Clark**

Assistant to the Chair

Email: [msclark@binghamton.edu](mailto:msclark@binghamton.edu)

Phone: 607-777-6511 | Fax: 607-777-4094

### B. SSIE Faculty

#### **Sarah S. Lam**

Associate Professor

Graduate Director of Industrial and Systems Engineering

Assistant Director for Systems Analysis and Modeling, Watson Institute for Systems Excellence ([WISE](#))

Email: [sarahlam@binghamton.edu](mailto:sarahlam@binghamton.edu)

Phone: 607-777-4754 | Fax: 607-777-4094

#### **Harold W. Lewis III**

Associate Professor

Graduate Director of Systems Science

Email: [hlewis@binghamton.edu](mailto:hlewis@binghamton.edu)

Phone: 607-777-4482 | Fax: 607-777-4094

#### **Mohammad T. Khasawneh**

Assistant Director for Health Systems, Watson Institute for Systems Excellence ([WISE](#))

Director, Healthcare Systems Engineering Center

Director, Human Factors and Ergonomics Laboratory

Graduate Director of Executive Master of Science in Health Systems

Email: [mkhasawn@binghamton.edu](mailto:mkhasawn@binghamton.edu)

Phone: 607-777-4408 | Fax: 607-777-4094

#### **Nagen Nagarur**

Professor and Department Chair

Assistant Director for Supply Chain Management, Logistics and Manufacturing System, Watson Institute for Systems Excellence ([WISE](#))

Email: [nnagarur@binghamton.edu](mailto:nnagarur@binghamton.edu)

Phone: 607-777-3027 | Fax: 607-777-4094

## **C. Graduate Staff**

### **Ellen Tilden**

Coordinator of Graduate Program

Email: [etilden@binghamton.edu](mailto:etilden@binghamton.edu)

Phone: 607-777-2873

Office: Engineering Building, Room H11

## **D. Mailing Address**

Dept. of Systems Science and Industrial Engineering

Thomas J. Watson School of Engineering and Applied Science

Binghamton University

P.O. Box 6000

Binghamton, NY 13902-6000