SUNY The State University of New York

External Evaluation Report

Form 2D

The External Evaluation Report is an important component of a new academic program proposal. The external evaluator's task is to examine the program proposal and related materials, visit the campus to discuss the proposal with faculty and review related instructional resources and facilities, respond to the questions in this Report form, and submit to the institution a signed report that speaks to the quality of, and need for, the proposed program. The report should aim for completeness, accuracy and objectivity.

The institution is expected to review each External Evaluation Report it receives, prepare a single institutional response to all reports, and, as appropriate, make changes to its program proposal and plan. Each separate External Evaluation Report and the Institutional Response become part of the full program proposal that the institution submits to SUNY for approval. If an external evaluation of the proposed program is required by the State Education Department (SED), SUNY includes the External Evaluation Reports and Institutional Response in the full proposal that it submits to SED for registration.

Institution: University of Albany, SUNY

Evaluator Name (Please print.): Gary C. Kessler, Ph.D.

Evaluator Title and Institution: Associate Professor, Embry-Riddle Aeronautical University

Evaluator Signature: 

Proposed Program Title: Digital Forensics

Degree: B.S.

Date of evaluation: 6 February 2014

I. Program

1. Assess the program's **purpose, structure, and requirements** as well as formal mechanisms for program **administration and evaluation.** Address the program's academic rigor and intellectual coherence.

   The program proposal addresses these issues and I must say that it is one of the better curriculum proposals that I have read, in general, and one of the best related to digital forensics. I find little to fault in the curriculum proposal so I will only address here what I considered to be the high points related to the program and this question.

   Purpose, structure, and requirements: The purpose of the program is well described in the program rationale section of the proposal. If anything, the case for this program is understated and the future need for this skill underestimated. We are in an Information Society, although that phrase seems out-dated today. We are under-prepared to protect our information; note, by way of example, that credit card companies in the U.S. find it preferable to cover card holders' losses rather than build a system to add additional protections to credit cards because it is cheaper to pay out penalties than to upgrade. A sound business decision? Perhaps, if all you count is dollars to the credit card companies, but totally insensitive to the needs of the users, end user cost and

inconvenience, and the protection of information. And regardless of the amount of protection that would be put in place, there will be intrusions, data theft, policy violations, criminal activity, fraud, and other events that will require people trained in incident response and investigation; that is digital forensics. It is clear, then, that we need expertise at the policy and management level, as well as at the educator and practitioner level.

I designed and started an undergraduate program in digital forensics in 2003. At that time, I included a course in forensic accounting. In that era, the majority of practitioners were from the law enforcement community and although there were many financial crimes at the time, the majority of law enforcement cases were related to Internet-based child sexual exploitation. In the last 10 years, the landscape has changed -- the majority of hiring of college graduates in this space has been in the private sector and the majority of the investigated cases have a financial aspect. For that reason, I am quite pleased to see not one but two courses specifically related to forensic accounting. This is a growing need.

At the same time, creating a digital forensics program today is hard because the curriculum needs to balance the fact that, at its core, digital forensics is a subset of computer science; one is, after all, investigating computer hardware, operating systems, file systems, and applications. However, one does not need to be a computer scientist in order to investigate computer crimes. Indeed, tomorrow's cybercrime investigations will require awareness and knowledge of many disciplines, including culture, communication, management, and business. Building a program that balances these diverse needs at the undergraduate level *and* prepares students for either the workplace or graduate education is tough. I believe that the proposed curriculum does an excellent job walking this fine line.

> **Notes:** I have two minor observations about the structure of the curriculum. First, the program does not include an ethics course. Indeed, while I know that ethics is covered within the courses in the program itself, there is no structured ethics course taught by an ethicist that describes different ethical systems and frameworks, and the impact on ethics by culture, religion, politics, etc. Second, I would observe that the catalog description of BFR 402 (Digital Forensics Moot Court) describes *mock trials* rather than a *moot court*. I totally support the concept of teaching students how to prepare reports and expert testimony and, therefore, believe that this is an essential course. I would merely suggest renaming the course to more accurately reflect the mock trial aspect.

Program administration and evaluation: Dr. Sanjay Goel, the director of the program should it be approved, is well qualified to manage this program. His past scholarship, conference activity (including organizing conferences at University of Albany), passion, knowledge, commitment, and experience make him ideal to run this program. All of the administrators with whom I met, from the Dean's Office to the Provost's Office, make it clear to me that the program has the full support of the institution.

Academic rigor and intellectual coherence: The proposed program has an appropriate mix of courses at all levels of lower and upper division courses, and appropriately moves up Bloom's taxonomy in terms of rigor and cognitive challenge. The program has a good flow and the courses "interact" with each other nicely. The inclusion of a number of electives allows a student to include additional courses of their own interest and to supplement their learning.

2. Comment on the **special focus** of this program, if any, as it relates to the discipline.

As mentioned above, I applaud the focus of the program on the needs of the private sector and the inclusion of forensic accounting courses.

3. Comment on the plans and expectations for **self-assessment and continuous improvement**.

The program and university have a variety of mechanisms to track the quality of the program, maintain currency, and ensure student success, including the use of student course evaluations, tracking the number of graduates who get jobs in the field and/or go on for advanced education, talking with potential employers, and keeping in close communication with both current students and alumni. In addition, the program will make use of an Advisory Board composed of subject matter experts from the private sector, public sector, and academia.

4. Discuss **the relationship** of this program to other programs of the institution and collaboration with other institutions, and assess available support from related programs.

The program is very multidisciplinary and is clearly linked to other programs at the university, notably accounting, business, criminal justice, computer science, and political science. This is demonstrated by both the list of faculty in the proposal and additionally substantiated by the fact that the program shares faculty lines with the computer science and political science departments.

5. What is the evidence of **need** and **demand** for the program locally, in the State, and in the field at large? What is the extent of occupational demand for graduates? What is the evidence that demand will continue?

As stated above, I believe that the need and demand for this type of program was very well expressed and documented in the proposal; the details are there as well as the justification. The digital forensics field has clearly demonstrated hiring growth for the last 15 years and shows no signs of abatement; indeed, the field has also demonstrated maturity, as the skills and education required of the practitioner continue to evolve and expand as the computer and telecommunications industries -- and the hardware, software, and services -- evolve and expand. Today's students must not only understand the technology in order to collect data, but they must be able to analyze and extract meaningful information hidden deep in the infrastructure. As we are able to acquire more and more information, it is important that students can also synthesize what data is being found.

One thing in the proposal that surprised me was that no four-year degree in computer forensics is currently available in the state of New York, although there are two-year degrees available. This, alone, demonstrates a crying need in the state.

II. Faculty

6. **Evaluate the faculty**, individually and collectively, with regard to training, experience, research and publication, professional service, and recognition in the field.

The three core faculty members with whom I met -- Dr. Sanjay Goel, Dr. Yuan Hong, and Mr. Fabio Auffant -- bring excellent credentials to this program, both individually and as a team. Between them, they have an enviable track record in terms of research, scholarship, teaching, service to the profession and university, and practice. Dr. Goel has been active in the field for many years, has organized the regional Annual Conference on Information Assurance since 2006, and has extensive consulting experience overseas in countries that include Armenia, Russia, and Georgia. Dr. Hong's research centers on information security, privacy, forensics, and data analytics and privacy, bringing together psychology and motivations of perpetrators. Although only receiving his doctorate in 2013, he has published four journal articles and 14 conference papers, both nationally and internationally, since 2008. Mr. Auffant brings extensive public sector knowledge and practitioner experience to the team, having been in the New York State Police Computer Crime Unit from 1985 to 2012, when he retired as unit commander.

It is clear that the program faculty comprises veterans in the academic and practitioner community and emerging talent. This provides a cross-section of leadership and youth that should impress and attract potential students. The faculty is enthusiastic and passionate.

7. **Assess the faculty in terms of number and qualifications** and **plans for future staffing**. Evaluate **faculty responsibilities** for the proposed program, taking into account their other institutional and programmatic commitments. Evaluate faculty **activity in generating funds** for research, training, facilities, equipment, etc. Discuss any **critical gaps and plans for addressing them**.

   As noted above, the current three full-time equivalent (FTE) faculty members bring a wealth of theoretical and practical knowledge to the classroom and the research laboratory. Their staffing plan is to add two new FTEs by Fall 2014 (assuming that the program is live by then) and two additional FTEs by Spring 2015, including some faculty lines shared with other departments (notably one with Computer Science and one with Political Science). This level of staffing should be more than adequate to bring a wide level of content coverage and depth for the classroom.

   Dr. Goel has a good track record in obtaining research funds, public- and private-sector grants, and needed facilities and equipment; it was noted that his department currently has grants from the U.S. Department of Education, National Science Foundation (NSF), New York State Energy Research and Development Authority (NYSERDA), NBC Universal, and James S. McDonnell Foundation. A number of private sector companies with large digital forensics practices, in particular, are providing input as advisers to the program and are potential funding sources, as well.

   The program faculty has already recognized certain gaps in their expertise and has taken steps to address those. One example is in the area of supervisory control and data acquisition (SCADA) system security and forensics; the gap is being addressed by consulting with SCADA security expert Billy Rios to help develop and teach courses. Another gap is in the area of "chip-off" mobile device forensics and they are working with Albany Nanotech to shore up that area.

   While these gaps are not critical to a successful program, their identification by the faculty indicates an eye towards keeping abreast of current trends in the industry and research community, and ensuring that students are aware of these topics, as well.

8. Evaluate credentials and involvement of **adjunct faculty** and **support personnel**.

   At this time, no adjuncts are teaching in the program. All faculty are FTEs, which mean that they also have advising, curriculum development, and other service responsibilities. It is intended to use adjuncts sparingly, primarily as subject matter experts for those topics that are gaps in the knowledge of the faculty and/or areas in which the programs needs to grow (e.g., SCADA systems and chip-off forensics).

   The School of Business currently has two information technology (I.T.) personnel on their staff. The SOB I.T. people work closely with the university's I.T. staff and have a good relationship with them; the university maintains the larger infrastructure and software, while the SOB staff maintains SOB-specific facilities.

III. Students

9. Comment on the **student population the program seeks to serve**, and assess plans and projections for student recruitment and enrollment.

The faculty members of the digital forensics program are trying to attract the widest variety of students and ensure their success in the program. First, students can enter the program in a "traditional" way -- students at the university can declare digital forensics as their major and enter the program in their sophomore year. Second, this program will accept "direct admits," students who declare digital forensics upon entering the university. This latter group also has associated termination criteria to ensure that they do not get in over their head early in their academic career.

The third pathway to entry is via articulation agreements with at least six area community colleges. Each of the agreements is tailored to the individual community college, having created specific course maps for 2+2 programs. The digital forensics faculty made it clear that they did not view these transfer students as "students coming from another college," but as "University of Albany students that are doing their first two years at a community college." There is also a plan on how to accept students from other four-year colleges where they might have taken their liberal arts/general education courses.

The bottom-line with all of these plans is that the faculty recognizes that this is a challenging program. Many students will be attracted to it because of the so-called *CSI Effect*; viewers of *CSI*, *NCIS*, *Law & Order*, *Forensic Files*, and other television shows see how computer forensics is depicted and want to press a button to solve crimes. Thus, the faculty plans to closely monitor students to set them up for success through programs such as Advising-Plus for first-year students, including those at the community colleges.

During my site visit, I met with two students, RR and DD, both of whom are sophomores and very interested in the rollout of the Digital Forensics program -- and how they can be admitted as juniors. RR is a Business Administration IT major with a Political Science minor; she was originally a Political Science major, which is how she found Univ. of Albany through her high school adviser. DD is double majoring in Accounting with a Business concentration with IT and Marketing, with a minor in Computer Science. DD came to the Univ. of Albany because several of his high school friends came here. Although he originally wanted to go to a larger, private school, he "settled" on a state school but has found that he has been able to excel at the school and "not get lost in a crowd."

Both students expressed being set up for success, obtaining career advice, and receiving excellent advising from faculty. RR is an Educational Opportunity Program (EOP) student and is in frequent communication with a university EOP advisor as well as a School of Business advisor. DD agrees that he has close advising support from a faculty advisor. Both also commented that faculty members are always available for questions and appear to enjoy the faculty-student interactions.

Both also commented that they like the new building and feel that it is very conducive to classes, labs, and study. They also feel that the university has provided excellent resources and facilities for their education.

10. What are the prospects that recruitment efforts and admissions criteria will supply **a sufficient pool of highly qualified applicants and enrollees**?

The university appears to be very organized in their recruitment efforts and deliberate in supporting this program. In fact, they are ready to advertise the program as soon as it is approved.

Among the efforts made to attract qualified students are the creation of a short video about computer forensics and the B.S. program, as well as a postcard campaign to high school guidance counselors and qualified

students. One of the problems with identifying qualified students, by the way, appears to be because the PSATs still define computer forensics as a category under Law Enforcement. Thus, contact with guidance counselors is particularly important.

The admissions office has recruiters active throughout New York and New England, as well as big population states such as California, Florida, and Texas. They also have international recruitment efforts in countries such as China, India, and Israel. Finally, their *University in the High School* program provides additional outreach.

Because of the relationship with community colleges, the university anticipates 20-30 students per year coming into the program just from the two-year schools.

11. Comment on provisions for encouraging participation of **persons from underrepresented groups**. Is there adequate attention to the needs of part-time, minority, or disadvantaged students?

The primary student population at the university is traditional age (18-24 year old), full-time students. At this time, there is no particular outreach to non-traditional students or continuing education students although there are plans within the Digital Forensics program to offer part of the degree program online. Approximately 55% of the undergraduate applications are from minority students and approximately 45% of the incoming class is from that population, although there was no breakdown by major department or school. There are a large number of Pell Grant recipients, which is one way in which the university tracks minority students.

> **Notes:** Although not tracked by the university, females are an underrepresented group in I.T. and many related fields. While digital forensics is often viewed as a technical program -- and it is -- there are many female professionals in the field as it is more about problem solving, analysis, and investigation than it is about I.T. I would recommend that outreach be made particularly to potential female students.

12. Assess the system for monitoring **students' progress and performance** and for **advising students** regarding academic and career matters.

Because of the design of the curriculum, students progress pretty much in a lock step through their courses. This actually provides a mechanism so that faculty and advisors can monitor how students are moving through the program.

Because lab rooms have 24 seats and staffing plans call for offering two sections of each course per semester, plans are for gearing up to 48 students per class. Advising can track Direct Admits and other students in the major to ensure proper progress, and the EOP closely tracks minority students.

At this time, not all of the desired automated tools are yet in place with which to track students. The university has stated that they will track students manually, as necessary, until the automated systems are in place.

The staff and administrative leadership was quite open about the fact that they know that there are issues that will come up that they don't yet know about and cannot anticipate. That said, they are flexible and dynamic and will take events as they arise and solve problems in a way that helps the students and strengthens the program, all the while remaining true to the university requirements.

13. Discuss prospects for graduates' post-completion success, whether **employment, job advancement, future study, or other outcomes related to the program's goals.**

The university, School of Business, and the program all have methods with which to help students secure jobs, advanced studies, or other activities to support the students. The program Advisory Board will be composed of individuals from the private sector, public sector, and academia -- and specifically selected from organizations that can help supply employment opportunities, student internships, and/or access to related graduate programs. University, school, and program career fairs will also help bring employers and students together, including the preparation of a program *resume book*, containing student resumes that are distributed to potential employers. The School of Business, in particular, has its own Career Services professional who helps distribute potential employment information to students and alumni.

IV. Resources

14. Comment on the adequacy of physical **resources** and **facilities**, e.g., library, computer, and laboratory facilities; practical and internship sites or other experiential learning opportunities, such as co-ops or service learning; and support services for the program, including use of resources outside the institution.

The I.T. resources and computers appear to be adequate for the programs needs. While the lab systems utilize the Windows operating system, virtual machines allow students access to other operating systems, as needed. The I.T. infrastructure appears to be scalable, with significant growth potential. The classrooms use today's common multimedia setup, and the digital forensics labs have the ability to be isolated from the university's network and Internet. Ghost images are used to push out the correct computer environment for the classrooms, and a license server allows easy management of software such as FTK and EnCase. The School of Business has an internal I.T. staff of two.

The university has three libraries -- one for Business, Humanities, and the Social Sciences, one for Science, and one for Criminal Justice. The first one of these is the primary library most likely to be used by students in this program, although all students have access to all three. There are three library staff members that support School of Business programs, and they report that library usage is pretty high, albeit primarily as a location for study as opposed to research. Some faculty members do, in fact, require non-Internet readings of the students and the institution is good about providing money for periodicals and journal databases. There is also a strong inter-library loan program. The staff reports that they believe that university support is very good in getting them what they need; while not cutting edge, they are mostly state-of-the-art.

Information literacy is a goal of the university, although arranging a library orientation is the job of each individual department. The EOP offers a library orientation to all EOP students.

> **Notes:** Information literacy is incredibly important in a fast-moving field such as digital forensics. I would recommend that the program faculty consider adding a library tour and orientation to the digital forensics program.

15. What is the **institution's commitment** to the program as demonstrated by the operating budget, faculty salaries, the number of faculty lines relative to student numbers and workload, and discussions about administrative support with faculty and administrators?

My meetings with university administration and staff personnel gave a clear indication that the institution supports its students, faculty, and programs. To a person, all were enthusiastic about this program. The university acknowledges that faculty salaries in this field will necessarily be high because of the potentially high market salaries; it is the university's strategy to attract and retain good professors, and so they pay the

needed salary, as well as budgeting for conferences, research, and travel. In this program, in particular, attracting good faculty is key to attracting good students. A 2+2 workload is very conducive to quality teaching and research leadership.

Administratively, the university provides support in terms of enrollment management and, of course, from the registrar's office. The new School of Business building is a clear indication of infrastructure support; in fact, all of the buildings that I saw appeared to be relatively new. The university appears to work very hard to balance the needs of the students, student success, faculty support, curricular integrity, and preparation for career or advanced education.

As far as the Digital Forensics program, faculty salaries have been provided through the *SUNY 2020* faculty-hiring proposal with six lines committed to the program with competitive salaries. The School of Business provided $30,000 for the initial training lab and will be providing more funds for further lab development. Software licenses are supported through grants, partnerships with forensic software providers, departmental funds, and student lab fees. Grant funding will also be used to provide additional funding for program and curriculum development. Adjuncts will be supported from tuition fees, as needed.

V. Summary Comments and Additional Observations

16. Summarize the **major strengths and weaknesses** of the program as proposed with particular attention to feasibility of implementation and appropriateness of objectives for the degree offered.

I believe that the major strengths of this program are the focus on private sector, the inclusion of forensics accounting, and the strength -- and passion -- of the faculty. The recognition of the multidisciplinary nature of the field -- computer science, business, culture, ethics, privacy, law, and more -- is incredibly important. The faculty is already looking to the Next Big Thing; this visionary thinking will keep the program fresh and up-to-date, and the students well prepared.

I see no major weaknesses or concerns in the program, as proposed.

17. If applicable, particularly for graduate programs, comment on the ways that this program will make a **unique contribution** to the field, and its likelihood of achieving State, regional and/or national **prominence**.

The primary uniqueness appears to be that it will be the only such four-year degree program in the state. This is significant, given the university's proximity to both the state capital and nation's financial capital.

18. Include any **further observations** important to the evaluation of this program proposal and provide any **recommendations** for the proposed program.

I have nothing more to add. The bottom-line is that I think that this is a well-constructed proposal from an institution that is ready to offer and support an excellent program. My few minor comments are noted above.

Norwich University
Advanced Computing Center

SUNY The State University of New York

EXTERNAL EVALUATION REPORT

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Evaluator: Peter Stephenson, PhD, CCFP, CISSP, CISM, FICAF
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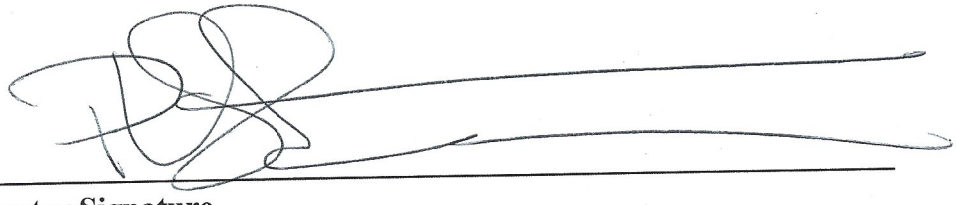

Evaluator Signature

Proposed Program Title: Bachelor of Science Degree in Digital Forensics
Degree: Bachelor of Science
Date of Evaluation: 7 February 2014

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I. Program

My overall impression of the proposed program is very positive. It is the right kind of program at the right time and it is well thought out. In short, it is the kind of program that I believe will attract the best students, prepare them for the work world and advance the state of digital forensic science through research and practical application.

1. Purpose

The mission of the new program is right on target. It has several important elements:

- High quality educational experience
- Development of critical thinking
- Adapt to changing environments
- Deep understanding of technical, legal, financial and psychological influences related to digital forensics and digital investigation.

These elements define the purpose of the program and offer a complete, correct rationale.

a. Structure

The program is structured along typical academic lines with a few innovative approaches added in. One aspect that is not typically found in other schools is the opening of the freshman year with a computing course. This helps capture the student's interest and for those students who already have some computing experience it allows them to continue in an academic setting immediately.

2 + 2 or degree completion programs are an important part of the structure of the new program. These assume that some level of academic attainment, usually in the form of an AS degree, comes with the new student. This allows transfer students to enter the "meat" of the program immediately upon entry.

Another strong area of the program is the allowance for numerous electives. That allows students to take double majors, minors or focus more deeply in the digital forensic area. These opportunities are important because digital forensic science is, in its nature, multidisciplinary and students who have multidisciplinary skills will be in highest demand in the workplace.

b. Requirements

i. Student Admission

The requirements for admission into the program are rigorous. A high GPA is necessary assuring that only those students most likely to succeed will be accepted. Digital forensic science requires intellect, a questioning mind, critical thinking skills and excellent communication skills. Assessing students preparing for admission – whether direct admits or transfer students – should begin with GPA and progress through an appropriate interviewing process to ensure that the student will succeed.

ii. Physical Plant

The practice of digital forensic science, like any science, requires laboratory facilities. These facilities are present for the most part within the UAlbany infrastructure. Where such facilities are not immediately

available they often may be accessed through cloud providers or other universities. The proposing department is investigating such relationships.

iii. Faculty

In-place faculty is prepared to teach this new program. However, additional faculty is required and those faculty members are being sought currently. Besides digital forensic faculty, there are faculty members from several other departments who have agreed to participate in the program. These faculty members represent a wide range of collateral disciplines, enriching the program.

c. Program Administration and Evaluation

One of the important questions that I asked during my discussions addressed the method of determining whether or not the program was successful and I following by asking what the consequences would be if it was not. I asked several people these two questions and the answers were very consistent.

Success of the program will be determined by the success of its graduates. It will be measured in their abilities to get good employment in the field and the continuous performance of the students while in the program. Using the students and their successes is an appropriate measuring stick.

In addition to the measurement based upon graduate success, the program has articulated nine specific, measurable outcomes. These outcomes are appropriate and comprehensive.

Determining that the program is not successful is to be based upon a set of metrics relating to the measures of student success. Should the program not be successful it would be dismantled and its component courses merged into other programs. The curriculum and faculty are selected such that nothing of substance would be lost if the program itself failed. However, neither the people I interviewed nor I expect that to be an issue. It was, of course, important to assess the down side as well as the more probable up side.

The program is solidly administered. Professor Goel has a solid understanding of what is necessary, how to measure it and how to deliver for the students. With an appropriate faculty size he will be able to devote an appropriate amount of time to program administration.

2. Special Focus of the Program

There are several potential special focuses that are anticipated for the program. Two of the most important are mobile devices and SCADA. These two special areas are extremely important today. In one case, mobile devices comprise the most important and difficult area of device forensics. Focusing on that area is an important plus for students.

SCADA, on the other hand, is a prime target for cyber terrorists. Understanding SCADA systems and SCADA forensics is critically important to security of the Nation. It also is an area that is in its infancy offering much opportunity for research and for putting the program at the forefront of digital forensics programs at the undergraduate level.

Finally, a product of the experience of Professor Goel, smart grid forensics is a focus area for the future. This is consistent with the focus on SCADA and is a sign of the evolving technologies in the electric power sector.

Another area that should be considered is DFIR – Digital Forensic Incident Response. DFIR is the set of techniques and tools that are important to the investigation of cybercrime breaches, especially when the breaches are large scale. The nature of cybercrime today is that large breaches are becoming the rule rather than the exception. This trend is likely to continue for the foreseeable future.

3. Self-Assessment and Continuous Improvement

The understanding that the program must be assessed continuously as part of determining its level of success is at the root of its self-assessment. Self-assessment must progress continuously in the digital forensics field because the field moves extraordinarily quickly. The faculty and administration of the program are dedicated to making it – and keeping it – one of the premier programs of its type. That requires continuous improvement in processes, curricula, teaching and lab methods, and hardware/software. I am satisfied that the faculty and administration of the program are aware of this and are dedicated to doing it.

4. Relationship to Other UAlbany Programs

UAlbany is fortunate to have both an extremely strong forensic science program and an extremely strong criminal justice program. Bothe programs are ranked in the top ten nationally. The strong relationship with the criminal justice program is a key success factor for the digital forensics program. Similar relationship should be cultivated with forensic sciences as well.

Additionally, location in the School of Business gives students a wide range of business-related options for minors or double majors. Forensic accounting, for example, offers a strong touch point between digital forensics and business.

Providing a multidisciplinary environment for digital forensics students depends upon strong ties to other programs within the university. However, strong relationships with other colleges, universities and community colleges also are important. The ongoing effort to forge and grow those relationships is a core part of the program administration plan. Both for the benefit of being feeders for top students into the UAlbany program and for the benefit of collaboration these relationships will become increasingly important.

One area where the program can benefit is being recognized as a Center of Academic Excellence in Digital Forensics. That designation brings program students, faculty and administration in contact with peers at other top-ranked programs. The program administrator has asked me for information that will assist him in applying for that accreditation.

5. Need and Demand

The evidence of need and demand is well-presented in the program proposal to the University Senate, Bill 1314-02. If anything, it is understated. One career web site had nearly 2,900 computer forensics

jobs listed while another had over 600. There are not enough qualified digital forensics practitioners and the demand likely will outstrip supply for at least a decade if not longer.

The problem is that graduating students from many programs simply are not qualified. A program that turns out solid, experienced, well trained and educated graduates will be in demand by prospective students and employers alike.

II. Faculty

Overall the faculty as it stands is well-placed, qualified and provides a core on which to build a department. The anticipated addition of several new faculty members for the program is a necessity. Faculty required to teach the breadth of subjects required in digital forensics usually are not available in a single person. Thus, specialists are required in order to maintain quality coverage and to address future growth as the field changes, which it does rapidly.

6. Individual and Collective Evaluation

Collectively the core faculty is well and broadly qualified for digital forensics. They bring a multidisciplinary approach. The cooperating faculty from other disciplines and other departments add additional multidisciplinary talent to the pool of instructors. However, it is clear that more faculty with direct experience in digital forensics will be needed. Plans are in place to recruit and hire such faculty.

a. Yuan Hong

Professor Hong is well-qualified to teach in multiple digital forensic areas. That plus significant work in the area of privacy qualifies him well as a core faculty member in this program. He has the interest and motivation to progress into other forensic areas as well.

b. Fabia Auffant

Professor Auffant is, in the vernacular, "a great catch". He has experience beyond what we normally see in a university program and he is very close to being able to teach any aspect of digital forensics. He brings an important perspective to the program: that of a professional who has moved into academia.

c. Peter Ross

While Professor Ross may not be a core member of the digital forensics faculty he brings a very important aspect: project management. The science of digital forensics is no more important than the business of digital forensics and project management is a key piece of that business.

d. Siwei Lyu

Professor Lyu brings an important piece of digital forensics into focus: image forensics. Although he is a computer science professor he is an important contributor to the success of the program.

e. Sanjay Goel

Professor Goel is ideally suited to direct this new program. He has broad experience both in digital forensics and information security. Added to an engineering education and other technology

experience he brings a broad, well trained eye to the development, management and success of the program. He is the lynchpin that will pull the pieces together and make the program a success.

7. Faculty in General

In general there are not enough core faculty to present the proposed program. I come from a university with a very broad range of digital forensic courses (five) collected into a concentration and I am the primary instructor. It is rare that I teach the normal load of four courses. It usually is five and has been as high as eight. Even with an instructor being prepared to teach in our program, I still teach the majority of the course. That said, we are a small private university so we have more flexibility than large public schools. In order to present the proposed program at least five more full time digital forensics faculty will be needed.

While the existing faculty are well-qualifies in their particular knowledge areas – and are keen to learn and move into other areas – there is only one faculty member with solid, long-term professional and academic experience. There is a danger of overloading that professor is others are not recruited and hired. That said, it is my understanding that such recruitment is underway. Faculty requirements should be reviewed in light of program success and market growth annually and new faculty – full time or adjunct as appropriate – added.

All of the faculty have the potential to generate grant funds and to excel in research and publication. Under the leadership of Professor Goel, who is well-experienced in both, it may reasonably be expected that grant-seeking, outside project work and notable publications will be the rule rather than the exception.

8. Adjunct Faculty and Support Personnel

Adjunct faculty will be a key aspect of fueling future growth. Fortunately, there is no shortage of potential adjuncts in the Albany area. I did not evaluate any adjuncts at the time of my visit.

I interviewed one very important support person who provides technical support for labs and equipment. I was favorably impressed, especially since a program of this type needs such support and it cannot be expected, usually, from university IOT staff in general.

III. Students

I was fortunate to spend time with some potential program students and, in generally, was very impressed. They were serious, have clear and focused reasons for wanting to be in the program and, if they are indicative of other students seeking admission, signal that the program will have some of the best students of any other university teaching the same type of program.

9. Anticipated Student Population

Overall, I was impressed with the recruitment plans for the program. The transfer students likely will make up a large part of the program. The requirement of a 3.25 GPA to enroll and 3.0 to continue will attract the most promising students who will also have the best likelihood of success. In my view the student growth plans are realistic and manageable.

10. Sufficient Pool of Qualified Applicants

Again, the transfer and degree completion students will impact this significantly. To my knowledge there are no other universities building a digital forensics program with a significant aspect of degree completion recruitment. This will ensure that students are qualified for the program because there will be a clear metric of past college-level performance by which to measure.

11. Persons From Underrepresented Groups

Of the two students I spent significant time with one was a minority. While it is possible that the student was provided for me deliberately with that in mind, my observation as I walked the campus and the School of Business building was that UAlbany is a diverse campus. It is my impression that, as long as a student can qualify academically, the program itself offers no barriers to success.

12. Assessing Student Performance and Advising

Advising is a very big part of ensuring success in a fast moving program/career field such as digital forensics. The practice of directing students to non-program faculty for advisement should be augmented by mandatory mentoring by a member of the program faculty. The proposal encourages students to select a faculty mentor but, in my view, that is not sufficient. There are aspects of the science of digital forensics and, after graduation, digital forensic practice that are best conveyed by faculty experienced in the field.

Student performance is very closely aligned with the success of the program because the success of the program is being measures – appropriately – by the success of the students. However, in addition there are nine specific outcomes that also serve as metrics for measuring student performance within the program. These are appropriate and comprehensive.

13. Post-Completion Success

There is no way to say with certainty whether or not this program will, when the student reaches the job market, succeed. However, there are a number of factors that signal potential success:

- The high quality of the students enrolling in the program
- The state of the job market in digital forensics-related fields
- The multidisciplinary nature of the program
- The high quality of the pedagogy and practical application within the program
- The high quality of program leadership and current core faculty
- The commitment of the university to ensuring the success of the program and tuning the program to meet the needs of the students and of the job market

An important factor in predicting post-completion success is the state of the job market. Rob Lee from Mandiant, one of the top DFIR firms in the world, identified seven trends in digital forensics at a recent trade show:

- Data breach incidents are increasing. More events, more forensics needed.

- Lack of preparation for when things go bad. Rather than relying on technology, we need more skilled professionals.
- Loss of forensic expertise. Corporate-based forensic experts tend to flee to higher paying jobs with technology vendors and service providers.
- Civil cases increasing in sophistication. As lawyers learn more, cases become more complex. Lee talked about the burgeoning focus on meta data in legal cases.
- Too much data. Log data experts like LogRhythm, Log Logic, ArcSight, Nitro, and Q1 Labs present a ton of data to evaluate. Lee said that the real challenge is host-based data, not network data.
- Mobile data forensics. We need the ability to understand what's happening on iPhones, Droids, and Blackberries, not just Windows PCs.
- Volatile data collection and analysis. This is all about the collection of data residing in memory, which could make or break a case.

From these seven trends one can see easily that the market opportunities for well educated and trained digital forensic specialists is going to increase markedly. That is a good omen for post-completion success as long as the quality of the graduates is high.

IV. Resources

Resources are the largest single barrier to success in any digital forensics program. Digital forensics hardware and software are expensive. Qualifies instructors are rare and expensive. Laboratory facilities often must be dedicated to digital forensics classes making multi-use labs impractical. That said, it is my clear impression that the management team for this program has considered these issues and addressed them directly.

14. Adequacy of Resources and facilities

Currently, the physical resources are barely adequate for the tasks that the program will need to perform. That does not mean that there is no alternative, however. The program has begun the budgeting process for hardware and software and has ordered much of the important lab equipment required. Additionally, program administration is engaged in negotiations with my university for access to our forensics cloud, an outreach funded by the Department of Defense.

The classroom and lab facilities are located in a new building that has been properly prepared for installation of necessary equipment. Some level of effort will be required to continue to plan, purchase and deploy appropriate digital forensic lab resources.

15. Institution's Commitment

One of the most impressive parts of my evaluation visit was my discussions with institutional management. It is absolutely clear that there is a high level of commitment at all levels from the top down. The program is a perfect fit for SUNY Albany and the institution's leadership knows this and supports the program full-on. There is a very high level of optimism about its success and it is clear that the program has been well thought out and that there has been strong participation at all levels.

V. Summary Comments and Additional Observations

16. Major Strengths and Weaknesses

There are many strengths and very few weaknesses in this program. The preceding paragraphs have highlighted most of the strengths so I will limit my list below to the most important ones. Since there are so few weaknesses I will describe them fully. As part of that description I will offer recommendations for remediation should the university choose to do so.

a. Strengths

- Program leadership
- Vision for the program and what it is and should become
- Extremely strong institutional commitment
- Excellent plan for selecting and retaining top students
- Excellent relationships with outside resources
- Multidisciplinary nature of the program and its professors
- Relationships with other departments/programs within the university
- Degree completion program
- Program core and participating faculty
- Location of the university in general and the program in particular; Albany is a strong location for digital forensics and the School of Business is an appropriate home for the program.
- Strong national reputation of the university's criminal justice and forensic science programs

b. Weaknesses

- The library sees the digital forensics program as an offshoot of computer science. It is not. The ongoing addition of digital forensics books for the collection needs more guidance from the program.
- Advising is not done by program faculty and, therefore, does not have a strong digital forensics component. Students should be required to select a mentor from the digital forensics faculty and a formal program of mentorship developed.
- It is important that students understand the role of the person in the digital forensic process. Computers, for example, do not commit crimes – people do. There is a single psychology course in the program and there should be a second: forensic psychology. Some universities recommend that another course, abnormal psychology, be taken between these two. That is a decision that the psychology department will need to make.
- Knowing what it costs to equip and staff a world-class digital forensics program, I am a bit concerned about the available budget, especially for hardware and software needed for digital forensic labs. I recommend that budget for a forensic cloud – a small virtual system that can house digital forensic tools and create a virtual laboratory environment – be considered strongly. By moving the forensic lab exercises to a cloud environment you save the cost of more expensive digital forensic computers for each student workstation. Having had the experience of building just such an environment – currently supporting over 300 student labs – I am will to be of what assistance I may to help with this process. Additionally, I recommend that

relationships with such digital forensic vendors as AccessData, Guidance Software and others be pursued. These relationships can result in the most economical approach to software and hardware acquisition.

17. Unique Contribution to the Field

There is no doubt that by specializing in emerging important areas such as mobile device forensics, SCADA forensics, smart grid forensics and a few others such as DFIR and eDiscovery, this program can make a significant impact. When it is successful, it is appropriate to extend its reach into graduate programs where graduate research can make an even greater impact. However, undergraduate students should be encouraged to conduct research – perhaps with faculty or graduate students – and publish as well.

18. Further Observations and Recommendations

My overall impression is of a well-conceived, well-constructed undergraduate digital forensics program with significant institutional support. While there are a few challenges, there is absolutely nothing that I see that would limit the potential of this program if it is executed according to plan.

a. A Few Additional Recommendations

- Seek accreditation as a Center of Digital Forensics Academic Excellence (CD-FAE) from DC3 – the Defense Cyber Crime Center.
- Encourage professors and students to join an association such as the American Academy of Forensic Sciences.
- Encourage student research in digital forensics.
- Seek meaningful summer digital forensic internships for students.
- Seek NSF CyberCorps Scholarship for Service grants.
- Begin immediately as the program is approved to develop a suite of digital forensic electives.
- Forge law enforcement relationships that will allow the students to work on live – or, at least, cold – cases.
- Encourage students to take at least one non-digital forensics course from the forensic science department.
- Encourage students to consider the legal aspects of cyber crime by adding a cyber crime and cyber law class to the curriculum.

UNIVERSITY AT ALBANY
State University of New York

School of Business
Information Technology Management Department

INSTITUTIONAL RESPONSE TO DIGITAL FORENSICS PROGRAM REVIEW

DATED: March 24, 2014

We have carefully reviewed the comments of the reviewers and are pleased with the positive endorsement of the program. There were no shortcomings however there were some valuable suggestions to improve the program in the future. Some of things that were mentioned are being planned already. We provide below a point by point response to each suggestion of the reviewer.

REVIEWER I

Comment:

I have two minor observations about the structure of the curriculum. First, the program does not include an ethics course. Indeed, while I know that ethics is covered within the courses in the curricula itself, there is no structured ethics course taught by an ethicist that describes different ethical systems and the impact on ethics by culture, religion, politics, etc.

Response:

As the reviewer pointed out we have ethics training scattered throughout the curriculum. Our Advisory Board will consider a proposal to create a week long orientation to the Digital Forensics program at the beginning of students' junior year. A dedicated session taught by an ethicist would be included during the week.

Comment:

Second, I would observe that the catalog description of BFOR 402 (Digital Forensics Moot Court) describes *mock trials* rather than a *moot court*. I totally support the concept of teaching students how to prepare reports and expert testimony and, therefore, believe that this is an essential course. I would merely suggest renaming the course to more accurately reflect the mock trial aspect.

Response:

The word "moot court" has been used interchangeably with "mock trial" however the word "mock trial" is more appropriate for this specific course and we will go ahead and change the title to "mock trial"

Comment

I would recommend that the program faculty consider adding a library tour and orientation to the digital forensics program.

Response:

This would also be included in the orientation mentioned above.

REVIEWER II

Comment

Another area that should be considered is DFIR – Digital Forensic Incident Response. DFIR is the set of techniques and tools that are important to the investigation of cybercrime breaches, especially when the breaches are large scale. The nature of cybercrime today is that large breaches are becoming the rule rather than the exception. This trend is likely to continue for the foreseeable future.

Response

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We are currently working with two industry experts to create an elective course in Cyber Incident Analysis. We will create other electives based on the trends we observe in this area especially focused on the needs of the intelligence community where the demand is rapidly growing.

Comment:

Seek accreditation as a Center of Digital Forensics Academic Excellence (CD-FAE) from DC3 – the Defense Cyber Crime Center.

Response:

We plan on seeking accreditation of Digital Forensics Academic Excellent (CD-FAE) from Defense Cyber Crime Center and will start preparing documentation after the launch of the program in the fall of 2014

Comment:

Encourage professors and students to join an association such as the American Academy of Forensic Sciences.

Response:

We will work on creating a local chapter of American Academy of Forensic Sciences

Comment:

Encourage student research in digital forensics.

Response:

We are planning to create a summer research institute with focus in Digital Forensics and have applied for NSF funding to support that. We also have several projects on security and forensics where we will engage students

Comment:

Seek NSF CyberCorps Scholarship for Service grants.

Response:

We are actively seeking grants to support the pedagogic elements of the program. We will also seek scholarship grants including CyberCorps

Comment:

Seek meaningful summer digital forensic internships for students.

Response:

We have already contacted several companies as well as law enforcement agencies in order to provide internships for forensics students and are constantly seeking new contacts. Our office of career services is very active in seeking such opportunities for our students.

Comment

Forge law enforcement relationships that will allow the students to work on live – or, at least, cold – cases.

Response

We have a very strong relationship with New York State Police and will develop a Memorandum of Understanding in context of the digital forensics program. We will also work with other law enforcement agencies to identify suitable cold cases to work on.

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Comment

Begin immediately as the program is approved to develop a suite of digital forensic electives.

Response

We have plans to develop several elective courses including the following

a) *Supervisory control and data acquisition (SCADA) system security and forensic: We are working with SCADA security expert* Billy Rios to help develop this course.
b) Chip-off device forensics related to forensic analysis of microchips: We are working with a commercial vendor Access Data and Albany Nanotech to shore up that area.
c) Cyber Incident Analysis: We are currently working with two industry experts to create an elective course in this area

Comment

Encourage students to take at least one non-digital forensics course from the forensic science department.

Response

Without a dedicated forensic science department, we have instead integrated the relevant concepts across our coursework.

Comment

Encourage students to consider the legal aspects of cyber crime by adding a cyber crime and cyber law class to the curriculum.

Response

Having worked with the School of Criminal Justice, we already have a strong focus on criminal justice in the program. In the future we can partner with them to create an elective focused solely on the legal aspects of cyber crime.

Comment

It is important that students understand the role of the person in the digital forensic process. Computers, for example, do not commit crimes – people do. There is a single psychology course in the program and there should be a second: forensic psychology.

Response

Our Cyber Crime Investigation course deals with the human elements associated with cyber-crime and digital forensics. We have changed this course to add specific lectures on psychology as it relates to criminals and victims and we will incorporate curriculum, cases, and exercises related to human psychology at other places in the curriculum as appropriate. We have attached the revised syllabus to this response.

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SCHOOL OF BUSINESS
UNIVERSITY AT ALBANY State University of New York

Course ID: **BITM-202**
Course Name: **Cyber Crime Investigation**
Credit Hours: **3**
Semester: **Spring 2014**
Textbook: **Not Required**
Course Prerequisites: **No**
Classroom: **BB123**
Time: **MW10:15-11:35AM**

INSTRUCTOR CONTACT INFORMATION

Instructor	Yuan Hong
Email	hong@albany.edu
Office Location	BB (New Business School)-316
Office Hours	MW 2:00-3:30PM or by Appointment

COURSE DESCRIPTION

This course prepares students to conduct cyber-crime investigations involving computers and the Internet, while utilizing investigative processes and techniques that facilitate investigations in the public and private sectors. Students will be introduced to proper techniques for collecting and preserving online information and potential digital evidence at crime scenes, as well as study the psychology of criminal behavior and prepare reports, which may be presented at administrative, civil and criminal proceedings.

LEARNING OBJECTIVES

After completing this class the student should be able to:

- Study the psychology of cybercriminal behavior, e.g., their motive and rationalization.
- Define Federal and State laws and legal processes relevant to cyber-crime investigations.
- Describe how to investigate a crime or incident facilitated by technology or the Internet.
- Utilize proper methods for collecting and preserving potential evidence from the Internet.
- Utilize proper methods collecting and preserving digital evidence at physical crime scenes.

COURSE FORMAT

Face-to-Face Classes & Online Activities: The course is offered as a combination of classroom delivery, hands-on experience of forensic tools and techniques, and online activities (i.e., discussion). Students are provided with an interactive learning environment through instructor audio lesson plans, online discussion groups (on Blackboard), and other learning assessments. Even though the course is spread over several weeks, it is important that students stay on schedule so that they can participate with other students in discussions. The class should require approximately 120 hours of work including instruction audio of lecture material, student assignments, discussion postings, and the reading of the posted materials.

COURSE RESOURCES

Course Website	Blackboard
Textbook	Not Required
Software (Free)	Dir2html, Hashmyfile, Camtasia, MWSnap, PrimoPDF
Reference Material	To be posted on Blackboard during Course Activities
External Readings	To be posted on Blackboard

COURSE OUTLINE & TENTATIVE SCHEDULE

Week	Topic	Activities
1	Introduction to Cybercrime Investigations and Psychology of Cybercriminal Behavior	Syllabus Introduction Discussion
2	Profiles, Motives and Philosophies of Cyber-Crime Offenders (Psychology Perspective)	Discussion
3	Basic Techniques used by Offenders to Commit Cyber Crimes	Discussion
4	Responding to Cyber Incidents and Crimes	Discussion
5	Report Writing and Presentation of Cyber-Crime Evidence	**Assignment I**
6	Interviews and Interrogations Related to Cyber Crimes	Discussion **Assignment I Due**
7	**Review and MIDTERM EXAM**	
8	Collection & Preservation of Online Evidence	**Assignment II**
9	Collection & Preservation of Digital Evidence at Crime Scenes	**Assignment III** **Assignment II Due**
10	Role of CC Investigation & Prevention in Business and Management Environments	Discussion **Assignment III Due**
11	Evidence Collection at a Mock Incident or Crime Scene	**Group Project**

12	Role of CC Investigation and Prevention in the Criminal Justice System Environment	Discussion
13	**GROUP PROJECT Presentation**	**Project Report DUE**
14	**FINAL EXAM (Time & Location TBA)**	

COURSE ACTIVITIES

Discussions: Discussions topics will be assigned and graded by the instructor. The discussion topic will be posted on Blackboard prior to the corresponding class, and students will be required to post response regarding the discussion. There will be a general discussion forum available for students (on Blackboard) to talk amongst themselves based on topics outside of class that will not be graded.

Assignments: Assignments will be assigned and graded by the instructor and will be based on the weekly discussion topic(s). Students will be required to complete and submit to the instructor by specific dates (generally one week later after the assigning it). Grading assessment will be based on acceptable grammar, terminology, formatting and substantive content. Electronic submission is encouraged.

Group Project: A group project will be performed with delivery during the last few weeks of this course. The project is a comprehensive work that covers all the procedures of cyber crime investigation and also fosters students' teamwork ability in practical investigation. The group can be gathered voluntarily and each group can include up to 4 students. The topic will be assigned in Week 11. Each group gives a 30 minutes presentation and submit the summary (only one copy is required for each group) in Week 13.

Exams: Students are required to take both Midterm and Final exams. The Midterm covers the contents of the first 6 weeks and the final exam covers everything from Week 1-14 (~30% Week 1-6, 70% Week 7-12). For exams, students will be responsible for the material covered in the lecture slides, projects and class discussions. In case you cannot attend the exam(s) on the scheduled date(s), a formal proof with appropriate excuse should be shown to the instructor. Otherwise, a make-up exam cannot be authorized.

GRADING POLICY AND ASSESSMENT

Activity	Portion of Grade
Participation & Discussion	15%
Assignments	25%
Group Project	20%
Exams	40%

Grading: The instructor will try to grade discussions, assignments, project and exams fairly and return them within a reasonable time period with relevant comments and to be available to discuss questions. Students are encouraged to setup an appointment to talk with the grader within a week of receiving a grade.

Late Submission: Late submission of assignments, projects, or papers will receive 25% off per day late from the final possible grade for the exercise unless authorized by the instructor.

Disability Statement: Students at UAlbany should contact the Disabled Student Services Center and the relevant professor at least a week before each F2F exam if requiring additional assistance. Missing any assessment without a verifiable legitimate excuse will result in a grade of zero. F2F Exams are expected to be closed-book unless otherwise specified and all personal electronic devices (laptops, cell phones, PDA's, etc.) should be put away.

Criteria	Outstanding 90-100	Proficient 80-89	Marginal 65-79	Unsatisfactory Less than 65
Content Critical Thinking	Comments/questions are thought provoking and display insight. They add to the depth of the discussion. Resources/citations are used to support comments or ideas.	Comments/questions are appropriate/ relative and add to the discussion, but may not always display insight or provoke thought. Resources/citations may be used to support comments or ideas.	Comments/questions are relative but do not add to the discussion or may show lack of insight. Resources/citations may be used to support comments or ideas.	Comments/questions are not relative to the case and do not add to the discussion. No references or citations are used.
Quantity Frequency	Minimally 14 postings on 7 different days.	Minimally 10 postings on 5 different days.	Minimally 6 postings on 3 different days	Less than 6 postings of fewer than 3 days of entries.
Timeliness	Comments are always made in time for others to read and respond.	Comments are almost always made in time for others to read and respond.	Comments are frequently made late in the discussion thread and give little time to respond.	Comments are made late in the discussion thread and give no time to respond.
Professionalism Mechanics	Always responds in a professional demeanor, considers others opinions; addresses	Professional; addresses group members; minor spelling/ grammar errors.	May not always be professional; does not address group members; comments &	Unprofessional comments; very frequent spelling errors, or

	group members; no grammar/ spelling errors.		responses have frequent spelling / grammar issues.	inappropriate terminology used.
Evaluation	Evaluation form has both positive and constructive criticism which supports the grade submitted.	Evaluation form has both positive and constructive criticism but does not necessarily support the grade submitted.	Evaluation form has a grade but does not have positive or constructive criticism.	No evaluation form submitted.

ACADEMIC INTEGRITY & HONESTY

Students MUST comply with all **University at Albany's standards of academic integrity**. As stated on the undergraduate and graduate bulletin, **"Claims of ignorance, of unintentional error, or of academic or personal pressures are not sufficient reasons for violations of academic integrity."** Non-compliance with academic integrity standards, will result in the student being reported to the Office of Graduate Admissions or the Dean of Undergraduate Studies Office (whichever applies) AND receive a lowering of a paper or project grade of at least one full grade, receive a failing grade for a project containing plagiarized material or examination in which cheating occurred, receive a lowering of course grade by one full grade or more, a failing grade for the course, or any combination of these depending on the infraction.

Violations include: Giving or receiving unauthorized help on an examination; Collaborating on projects, papers, or other academic exercises which is regarded as inappropriate by the instructor, submitting substantial portions of the same work for credit more than once, without the prior explicit consent of the instructor to whom the material is being submitted; misrepresenting material or fabricating information in an academic exercise or assignment; Destroying, damaging, or stealing of another's work or working materials; and presenting as one's own work, the work of another person (e.g., words, ideas, information, code, data, evidence, organizing principles, or presentation style of someone else). This includes paraphrasing or summarizing without acknowledgment, submission of another student's work as one's own, purchase of prepared research, papers or assignments, and the unacknowledged use of research sources gathered by someone else. Failure to indicate accurately the extent and precise nature of one's reliance on other sources is also a form of plagiarism. The student is responsible for understanding the legitimate use of sources, the appropriate ways of acknowledging academic, scholarly, or creative indebtedness, and the consequences for violating University regulations.

"GREAT" EXPECTATIONS

- Students can expect the instructor to be open to questions and concerns, but remain impartial and fair to all students.
- Students are expected to respectfully participate in the course and communicate with the instructor if there is confusion or lack of understanding of the material. In turn, the instructor will attempt to clarify any material.
- If the instructor is unable to attend class or office hours due to a personal emergency, students can expect for arrangements to be made for an alternate instructor or to be informed in as a timely a manner as possible.
- Students are expected to provide reliable contact information and inform the instructor of any updates.
- Students are expected to contact the instructor via email, phone, or in person for reliable response.
- Students are expected to complete all assignments and readings as well as set up meeting times with the instructor as necessary. It is important for students to inform the instructor if all available office hours interfere with other classes during the first week of the course.