

# What is the Student Recruitment Value of the CAE Designation?

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**Abstract** – *The National Security Agency (NSA) began designating colleges and universities as Centers of Academic Excellence (CAE) in 1998 if they met several criteria [1]. The Department of Homeland Security (DHS) now works with the NSA to designate schools as centers of excellence. CAEs must be able to map their curriculum to the government’s standards and demonstrate they have the faculty, organizational structure, scholarship, and commitment to developing a rigorous program. The schools committing resources to obtaining this designation are making a major multi-year commitment and need to get a return on investment. Many schools assume that this return comes in increased student enrollment. To justify this assumption, this project will attempt to determine if the CAE designation impacts the school selection of students.*

**Index terms** – CAE designation, student recruitment

## I. INTRODUCTION

For an Information Assurance (IA) program at a time of increasing focus on computer security in higher education, finding ways to appeal to students in the process of selecting a school is essential. Optimizing a program’s position in this process can be challenging. School selection for many students is not based on empirical research and schools may struggle with how to promote their schools and which programs to offer [2]. Studies of the process of school selection have revealed that previous students have identified a variety of factors that influence a student’s school selection including parental influence, printed marketing materials, and campus visits [2]. The influence of program quality is more difficult to measure, as sources of definitive data for making such determinations are themselves difficult to find.

Third-party evaluations of quality, beyond traditional accreditation and journalist-style rankings such as those featured in US News, are not as common in academia as in the marketplace. Information Assurance programs in particular have reputable evaluators in the National Security Agency and Department of Homeland Security which offer an opportunity to prove program quality through an opt-in evaluation process. The designation of an institution as a National Center of Academic Excellence in IA Education (CAE) by the NSA promises

both prestige and the validation of a third-party evaluation of IA program offerings. For IA programs, the CAE designation appears to be an important attribute to consider in the school selection process. As new student enrollment is pivotal to the success of any program, the role of the CAE designation in the school selection process is one way an institution might help to justify the expense of seeking the designation, particularly when looking for support for the initiative within the institution.

Achieving the designation is a complex process, as Collins et al observed when documenting their pursuit of the designation at New Jersey City University: “Without the backing of your institution’s leadership and a good division of labor, the process can easily become mission impossible.” Once received, the details of the resulting certification score may be difficult to decipher for potential students. It is not clear if this designation factors into student selection of an institution. There is little doubt that the CAE designation extends greater visibility within the academic community but it is unproven if this visibility extends to potential students.

### A. What is the CAE designation?

The United States Government, through the joint partnership of the National Security Agency and Department of Homeland Security, sets the standards for an academic institution to validate the quality of its IA program [4]. The designation has been in place since 1998 as a way to recognize and encourage IA education programs, and followed the decade of expansion of IA offerings in the 1990s [4]. The program began with seven designated institutions, though there are now over one hundred [4]. Nationally and regionally-accredited institutions with graduate and undergraduate programs are eligible to receive the designation and with it government recognition, publicity, and student scholarship opportunities [5]. This recognition includes acknowledgement as a certified institution at the Colloquium for Information Systems Security Education (CISSE) and the opportunity to join the network of certified peer institutions [3].

The CAE designation denotes a National Center of Academic Excellence in Information Assurance Education, while the CAE-R designation further denotes

excellence in Information Assurance Research. Institutions that receive this designation are acknowledged to integrate research activities as part of the learning experience and provide support for faculty and students to become involved in government-academic research collaborations. The designation has six criteria: evidence of IA research initiatives, encouraging student research, faculty actively publishing in IA, existence of a program in IA at the institution, a declared IA center, and more than one full-time instructor in IA [NSA Program criteria website].

There is no implicit funding or support from the NSA or DHS involved in designation as a CAE beyond travel reimbursement for the annual meeting of all of the Principal Investigators or their representatives. The designation can carry weight in research grant application processes [5]. For the sizeable investment in obtaining this status, it can be difficult for an institution to immediately quantify the rewards. Publicity is one aspect of the credential: the NSA maintains a website with information on all designated centers, as pictured in the figure below:



As the map demonstrates, there are now CAE institutions in most parts of the United States. While the CAE designation was originally intended for four-year institutions, the recently established CAE2Y designation is a means for recognizing programs at community colleges. The criterion for the CAE2Y designation is a subset of the requirements for four-year institutions. As of writing this paper, six community colleges have been awarded the CAE2Y designation.

Colleges awarded this designation have the additional benefit of greater visibility in a less-crowded market, whereas the number of Information Assurance programs at four year institutions and the corresponding number of CAE programs has been increasing steadily since the designation was introduced. The continuing expansion of programs reflect in part the ability of CAE programs to produce graduates with IA understanding and current

knowledge and training [4]. This is assured in part by the requirement of recertification for institutions on a regular cycle to demonstrate continued adherence to the most current standards and technology.

### B. Obtaining the CAE Designation

There are two principle requirements for obtaining the CAE designation: the first is curriculum certification from the Information Assurance Courseware Evaluation Program. As part of meeting these requirements, an institution must adopt their IA curriculum in accordance with the Committee on National Security Systems (CNSS) standards [4]. Curriculum certification requires offering courses that provide the minimum level of training for a selection of IA related positions, which can require adjusting existing coursework to fit the national standards. There are currently six positions whose responsibilities govern these standards [4]:

- Information Systems Security (INFOSEC) Professionals, NSTISSI 4011
- Senior Systems Managers, CNSSI 4012
- System Administrators (SA), CNSSI 4013
- Information Systems Security Officers, CNSSI 4014
- System Certifiers, NSTISSI 4015
- Risk Analyst, CNSSI 4016

This requirement can be met by demonstrating the availability of these courses and is not necessarily an evaluation of the quality of the program. However, this requirement is a prerequisite for proceeding further, as current certification through the courseware program is a mandated first step before proving compliance with the ten program criteria [5].

The second requirement encompasses the evaluation of program quality based on nine criteria on a points based system, with minimum requirements set in each category for achieving the ACE designation. The criteria for becoming a Center of Academic Excellence in Information Assurance Education are summarized in Table 1, although they are subject to change as the designation continues to maintain its currency with the needs of the IA field [6].

Table 1: Criteria for becoming a center of academic excellence

Criteria	Minimum Points	Maximum Points
Having an outreach collaboration	15	25
Treating IA as a multidisciplinary science	10	20
How the school encourages the	17	25

internal practice of IA		
Academic program encourages student research in IA	20	40
Faculty active in current IA practice and research	20	55
School has IA resources	8	15
IA academic program is robust and active	15	45
Declared center for IA education	20	35
Number of IA Faculty and course load	20	40
Total	145	300

These criteria are intended to affirm the resources of the school outside the classroom, with particular attention to the activity of faculty members and the institutional support for the program.

### C. Maintaining the CAE Designation

In order to demonstrate continuing quality and attention to the evolving state of computer technology, an institution that received the CAE designation must be reevaluated periodically [4]. This allows for the designation to be reassessed based on the most current information on curriculum and faculty. Re-designation is vital to assure that a program does not retain its status based on departed faculty or outdated institutional facilities. The requirements for re-designation increases the pressure for any institution to plan on a long-term commitment to the government curriculum and maintaining a competitive IA program.

## II. RESEARCH METHODOLOGY

An online survey instrument was developed using the Qualtrics tool and placed online during August, 2010. The instrument was reviewed by a panel of faculty peers from the ABCDE College IA faculty for readability and usability. The instrument received IRB approval and appeals were made to colleagues at other schools to forward the invitation to their students. The survey instrument was left online for a period of six weeks.

## III. RESULTS

The survey was taken by 67 students. The majority (83%) of the students were from schools with the CAE designation. A significant number of students (16%) did not know if their schools held the designation and only one student was from a program that definitely did not hold the CAE designation.

The majority of students (78%) responding to the survey were from graduate programs with 28% of the students enrolled in four year degree programs. There was one

student taking courses in a non-degree program. The majority (70%) of the students were majoring in Information Assurance with the remaining students (30%) majoring in Information Systems or Information Technology.

The majority (73%) of the responding students were male. The reported ages of the responding students is what would be expected for a group composed mostly of graduate students. A breakdown of the age distribution for the 63 students who responded to this question is contained in Table 2.

Table 2: Survey Respondent Demographics

Age Range	Number of Respondents	% of Respondents
25 or under	9	14%
26-45	35	56%
46 or older	18	29%
Preferred not to provide age	1	2%

The CAE designation was a factor for a majority (39/61%) of the responding students. The designation was not a factor for (25/39%) of the students. When asked if the CAE designation was the most important factor in their selection of schools, the majority (73%) of students said that it was not. Only 17 students (27%) said that the CAE designation was the most important factor in selecting their school. The majority of the students surveyed stated that the CAE designation was not the most important factor in their school selection.

The CAE designation is not the only factor that impacted the school selection of the responding students. The literature predicted that other factors would impact school selection. The survey listed some of the factors that impacted school selection in other disciplines and the survey results confirmed the literature. Table 3 shows the student responses on the predicted factors that impacted their selection of schools.

Table 3: School selection factors

Factor	Number of Responses	Response percentage
Location	44	70%
Academic reputation	34	54%
Academic programs	52	83%
Faculty	15	24%
Cost of tuition	22	35%
Parents	4	6%
Friends	4	6%
School guidance counselor or advisor	5	8%

Information from printed brochures	7	11%
Information from a Website	18	29%

The students were asked to explain why the CAE was important to them if they had listed the CAE as a factor or the most important factor in their school selection. Their responses can be clustered into eight categories. These categories and the number of responses is found in Table 4.

Table 4: Explanations why the CAE designation impacted school selection

Factor	Responses
The CAE designation brings credibility to a program	10
Improved employment opportunities	11
NSA funded scholarship restricted to students at CAE designated schools	1
Obtain a NSA-sponsored certification	2
Being able to attend an online program	2
Having a number of faculty that teach to the NSA standards	2
Meeting a contractual requirement	2
Had no bearing at all on the decision	2

The two main clusters were centered on credibility and employment opportunities. Students in today's tight economy are very concerned about employment prospects after graduation. The student perception that a CAE designation will help them find employment may draw students from programs without the CAE designation.

#### IV. CONCLUSIONS

It is important to note that this project is not a complete return on investment study. The amount and cost of the faculty time available to achieve and maintain the CAE designation will vary widely from school to school. Some schools already have IA curriculum and have a much shorter journey to achieving the CAE designation than schools that are "starting scratch". This project looked

The CAE designation can be a valuable asset to any Information Assurance program. The designation brings credibility and will definitely be a strong part of any school's overall package that attracts students. It is important to note that students do not feel that the CAE was their main attraction to their school. Schools considering pursuing the CAE designation must realize that the designation is not a recruitment magnet that will draw a program full of students on its own.

This study had a small sample size and limited response rate so it is difficult to draw hard conclusions. The responses received certainly appear to indicate that the

CAE designation is an important part of the recruitment package, but it does not serve as a "silver bullet" of student recruitment.

#### V. REFERENCES

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