# Placement Opportunities for Human Factors Engineering and Ergonomics Professionals
# Part I: An Overview, and Academic and Internship Positions

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During the period from November 1995 through October 1996, the Placement Service of the Human Factors and Ergonomics Society distributed announcements describing 195 positions available for human factors engineers and ergonomics professionals. These announcements were divided into two groups according to employment sector and position type. This paper provides an overview of employment opportunities available in all sectors, and an examination of announced academic and internship positions. Its sequel describes positions available in industry, government and consulting positions (N=162). The attributes of the position announcements examined include: degree requirements, major field of study, areas of expertise, required work experience, salary, geographic location, job description and skills required. Ninety-six percent of the positions were available in industry, consulting, and government/military. Fifty-one percent of the positions describe the masters degree as the minimum requirement.

Eight academic and twenty-five internship positions were announced. The major fields of study most frequently specified for these positions were human factors, psychology and engineering. The most frequently cited area of expertise for academics was Human Computer Interaction (HCI), followed by aerospace, aging , and transportation. Among internships, knowledge of human-computer interaction was most frequently cited. Professional skills and expectations of interns are also discussed.

During the period from November 1995 through October 1996, the Placement Service of the Human Factors and Ergonomics Society received announcements describing 195 positions available for human factors engineers (HFE) and ergonomics (E) professionals. This paper provides an overview of positions available and describes academic and internship positions while its sequel describes industry, government and consulting positions (Moroney, Anderson, & Soest, 1997).

In order to announce a position, employers completed a "Job Listing" form, provided by the HFES Placement Service. The employer provided information on a variety of factors including: degree requirements, major field of study, areas of expertise, required work experience, geographic location, job description, employment sector and skills required. The analysis of these data is the basis of this article. Please note that this analysis is not a complete listing of all the positions available to HF&E professionals. Related positions are also listed with other professional placement services.

## OVERVIEW

Positions in industry, consulting, and government/military comprised 96% of the 195 positions announced by the HFES Placement Service, the remaining four percent were in academia.. None of the 195 positions were listed as part-time, while one position was for an expert witness. There were eight full-time academic positions and twenty-five part-time internships.

An analysis of the degree requirements revealed that 51% of the 195 positions specified a masters degree as the minimum requirement, while a bachelor's degree was required for 37% of the 195 positions . Since 11 of these bachelor positions were for internship positions, at least 61 of the 195 full-time positions were available for individuals with a bachelors degree. However, it should be noted that some positions specifying a bachelors as a minimum degree requirement actually described an individual with a higher degree. A category "student and not specified" included seven additional internship positions available

to students either currently working towards their bachelor degree or for those who have completed their bachelor degree. Readers are advised that in some cases an internship announcement indicated that more than one position was available but did not specify a number. Since these announcements were entered as a single internship position, the number utilized in the data constitutes an underestimate. Sixteen doctoral positions were announced: seven in academia and nine in industry, consulting, and government/military.

Because of the diversity of the data, and the expected interest of the readers, the industry, consulting, and government/military positions (N=162) were examined independently. These data are reported in the sequel to this article (Moroney, Anderson, & Soest, 1997).

It should be noted that the positions examined in the following section do not represent all of the academic and internship opportunities available to HFE and ergonomic professionals. Related academic and internship positions are listed in the American Psychological Association's "Monitor" and the American Psychological Society's " Observer ", among others. While academic positions are usually announced across broad geographic areas (i.e. the entire U.S.), internship opportunities are often communicated informally, or by announcements to selected universities with which the employer previously had good relations and/or from which their more competent employees had graduated. Furthermore, internship opportunities may be announced within limited geographical areas, since the granting agency may not provide travel expenses and may prefer to meet its needs locally.

## ACADEMIC POSITIONS

Seven of the eight academic positions required a doctorate; the masters was specified for a position in lighting research. One position, located in Sweden, sought a researcher with an aerospace and virtual reality orientation, while another offered a tenure track position (all ranks) for an individual with a broad range of academic interests. Two of the positions provided teaching opportunities at undergraduate and graduate military institutions; two were post-doctoral positions in the area of transportation and safety. Human Factors/ Ergonomics were cited for all positions, psychology for six and engineering for five positions (Employers could specify up to three major fields of study per position).

All positions were described as full time, and two of the eight positions were described as tenure track, two were described as post-doctoral, and one specified a three year renewable contract. Academic level of the positions was specified only for the position in Sweden (at the entry academic level), and one other position that reported all academic ranks would be considered. With respect to courses to be taught, human factors/ergonomics was cited most frequently, with statistics/ experimental design, HCI, engineering psychology, and medical systems each being cited once.

Employers were allowed to specify up to six areas of expertise, however, since these areas were not prioritized, it was not possible to assess the primary needs of the employers. Human Computer Interaction (HCI) was cited for all eight positions; aerospace, aging, and transportation were cited for three positions. Expertise in the areas of: communication, consumer products, industrial ergonomics, medical devices, organizational design, T&E, and training was requested once within the eight position announcements .

Two of the positions did not require experience, whereas, three specified one year, one specified two years, one specified three years, and the remaining one specified 0-5 years. Salary was described as negotiable in all but one case; the position in Sweden offered $42-$45,000. Two positions were available in Minnesota, two in New York, one in Florida, and one each in Northern California, Michigan, and Sweden..

## INTERNSHIP POSITIONS

Twenty-five internship positions were announced. The minimum degree requirements for these positions were distributed among four categories: Masters (n=7), Bachelors (n=11),Student (n=5),and degree "Not Specified" (n=2). Thus, most positions required a minimum of a bachelors (i.e. these students would be working on their masters or doctoral degrees).

Human Factors/Ergonomics was cited most frequently (25 times) as the major field of study, while psychology was the second most frequently cited (23 times). Computer Science and Engineering were specified thirteen and ten times, respectively.

As was the case for positions in industry, government/ military and consulting positions (Moroney, Anderson, & Soest, 1997), the area of expertise (Fig. 1) most frequently requested was Human Computer Interaction (N=21), followed by Test and Evaluation (usually in the area of computer systems, N=11). Areas of expertise with less than two entries included the American Disabilities Act, communication, environmental design, individual differences, organizational design and management, and training.

There was considerable flexibility in the duration of internships; since most provided a range of durations, both the minimum and maximum durations are reported. Nine internships were offered for an

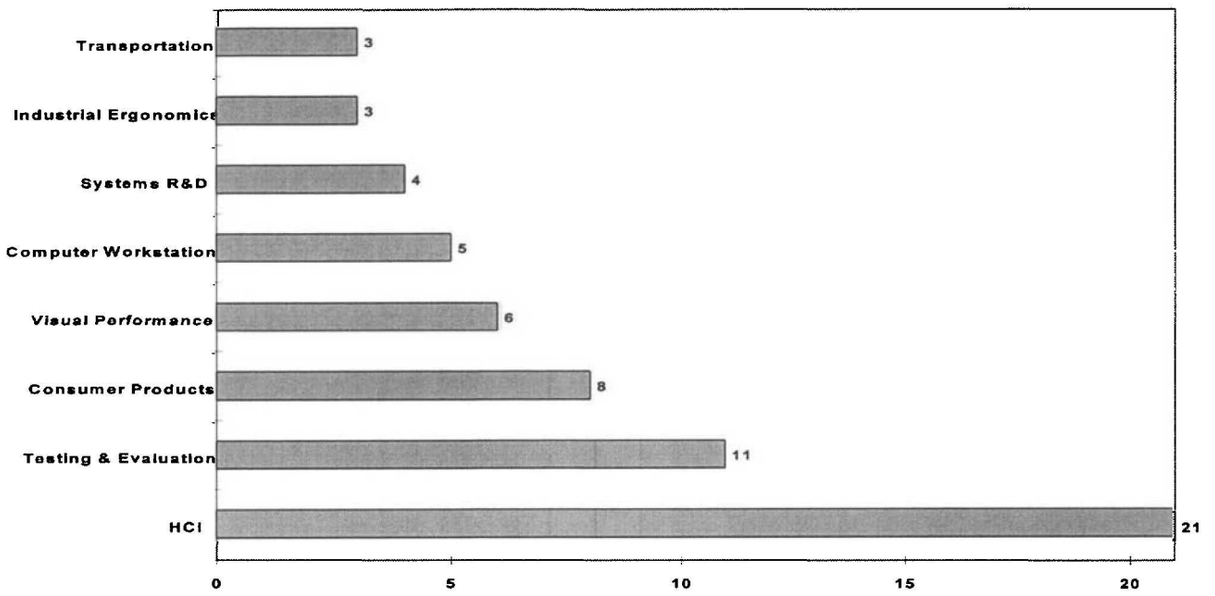


**Figure 1:. Areas of expertise specified for internships (N=25). More than one area of expertise could be specified for each position.**

academic quarter, a semester, or a summer; seven were offered for six months, four for nine months, and eleven for a year. Three were for an unspecified duration.

Salary was not specified for 20 of the 25 positions. The five positions for which salary was specified offered: $30-37,000 for one year, $2,000/month for 3 months, $2700-3500/ month, $15-25/hr, and $ 9-14/hr.

Zero experience was specified for 19 of the 25 positions. One position desired 6 months, four positions wanted one year of experience, and one position desired two years of experience.

Most (n=8) of the positions were located in the Southeast, followed by the Northeast (n=5) and Southwest (n=4). This is the same pattern as reported in the analysis of the 1994-1995 internship data (Moroney, Sottile, & Blinn, 1996). One announcement offered several positions throughout the U.S. to Ph.D. students (minimum degree requirement was masters).

The computer skills desired of interns were culled from the placement forms. They included knowledge of operating systems, applications (Windows applications, Microsoft Office products; statistical packages: SAS, SPSS) and programming (e.g. C++, Supercard, Visual Basic, and HTML).

A listing of professional skills and expectations desired of interns is provided in Table 1. Most of the observations regarding desired skills reported by Moroney and Adams (1996) also apply to the internship positions. Shapiro, et al.(1995) also describe skills needed by academics and interns.

**Table 1. Professional Skills and Expectations Desired of Interns.**

**Professional Skills**

* Analytical
* Communication (verbal, written and visual)
* Problem solving
* Computer Skills

**Expectations**

* Maturity
* Self-motivation
* Creative energy
* Ability to work independently
* Ability to work in a team/group
* Artistic (graphics) ability

## CONCLUSION

The authors hope that they have provided a useful overview of the placement opportunities available to HF&E personnel, as well as an analysis of the characteristics of and requirements for academic and internship positions.

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