

## **MANPRINT ON THE BEACH**

The World's First Master's Degree in Human Systems Integration (HSI)

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Since its inception nearly 20 years ago, the MANPRINT/HSI field has been lacking a formal education process for dedicated practitioners in the field. Thus I was pleased to be asked to share my experiences as a student in the world's first, and so far only, HSI master's program. Beginning with a cohort of seven students in January 2004, the U.S. Naval Postgraduate School in Monterey, CA recently awarded the world's first Master of Science (M.S.) degree in HSI after a comprehensive and demanding 24-month curriculum. If you were going to institute a master's degree for HSI, what better place to do it than right next to the beach in coastal California.

### **HISTORY**

Established in Monterey in 1947, NPS is an academic institution whose emphasis is on study and research programs related to the Navy's interests, as well as to the interests of other arms of the U.S. Department of Defense. The programs are designed to accommodate the unique requirements of the military. Its mission is to provide relevant and unique advanced education and research programs that increase the combat effectiveness of the U.S. and Allied armed forces, and enhance the security of the United States. NPS offers a full array of degree programs and certificates, with a focus on master's degrees and some doctoral degrees.

Beginning in 2002, in cooperation with the Army Research Lab's (ARL) Human Research and Engineering Directorate (HRED), NPS began to build the first curriculum for HSI. The prime architects included Dr. Hal Booher, who of course literally wrote the

book on *MANPRINT* and later on *HSI*, along with Dr. Robin Keesee, the former director of ARL/HRED and now the Deputy to the Commanding General of the US Army Research, Development and Engineering Command. The original program architect at NPS is Dr. Nita Miller, who almost single-handedly dragged the HSI curriculum through the NPS Academic Committee and into existence.

### **NOT YOUR AVERAGE GRAD SCHOOL**

As you might guess, going to NPS is definitely not your typical graduate school experience. First of all, the school's 1500 students are almost entirely military officers from the US, as well as Allied countries, with a small smattering of DoD civilians, and even a few US defense contractors. The typical student is a military officer, age 30-32 years, married with 1-3 children, and has about a decade of operational military (and combat) experience to draw from. There is a dress code for all students (business casual, no jeans or tennis shoes), and all military personnel wear uniforms every Tuesday. The various master's curricula in the school, from engineering and sciences to national security affairs to acquisition and business administration, call for 2-2½ times the course load of other master's degrees in the country, plus a mandatory thesis for all students. Nearly all students take 4-5 classes per quarter and spend 16-20 hours per week in the classroom. Normal class preparation is two hours for every hour in class, with 2.5-3 hours needed for projects, presentations, written reports, and exams. While taking your books and laptop to the beach or a local café is an option, I cannot recommend doing so very often.

Amid the NPS scene, the new M.S. in HSI is no different. Its top-notch faculty includes Drs. Nita Miller, Mike McCauley, Larry Shattuck, and Laura Barton (US Navy Lieutenant Commander), who collectively have over 75 years of combined experience in human factors, engineering psychology, human performance research, and industry experience. Drs. Miller and Shattuck now co-direct the program. The school's HSI Laboratory (HSIL) is stocked with over \$250,000 of equipment, including a motion tracking system, an eye/head tracking system, and a flight simulator. The centerpiece of the HSIL is the Applied Warfighting Ergonomics (AWE) Center, a state-of-the-art usability testing facility for recording and analyzing individual performance data in lab and field applications. Students and faculty can empirically evaluate human-system performance issues in the same equipment being designed for warfighters.

The first cohort of students drafted for the HSI degree four Army civilians from ARL/HRED and three US Navy lieutenants. Subsequent cohorts included more Army civilians from ARL/HRED, as well as US Navy and US Air Force officers. The program begins in January and lasts 24 months. NPS has a 4-quarter academic year, with a pair of two-week breaks in the summer (Independence Day) and winter (Christmas and New Years).

The HSI curriculum at NPS advocates a human-centered approach in the design, acquisition, testing, and operation of complex man-machine systems. The 8-quarter curriculum takes an interdisciplinary approach. It addresses all of the various domains of HSI (especially human factors), as well as defense systems acquisition fundamentals and program management, test & evaluation, a strong sequence in applied statistical

processes, systems engineering, and includes portions of the school's MBA curriculum. The degree culminates in a thesis that focuses on at least three of the HSI domains.

In addition to the M.S. program in HSI, the faculty is developing a certification program in HSI, currently designed as a 4-course sequence to be available via asynchronous distance learning (DL). Also available to all eligible personnel via DL is the school's excellent *Introduction to Human Factors* course. These courses are targeted for HSI practitioners who are not able to make the full two-year commitment, and for engineers and acquisition officials with new HSI responsibilities.

## **LIFE IN MONTEREY**

NPS was a two-year adventure in every sense of the word. My family and I were living in southeast Alabama while working at ARL/HRED's Fort Rucker office when I was offered the opportunity to attend NPS. We sold our house, packed up our two small boys, and endured the cross-country move. We rented a great little house four blocks up from the Monterey Bay and downtown area. In a nod to Procrustes of Greek mythology, we jammed ourselves into our home for the next two years, or as we would joke, "Half the space at twice the price!" We can attest to the fact that Monterey's reputation for cost-of-living is well-warranted, but that's part of the adventure. I was able to regularly bike to NPS and we were within easy walking distance of the local library, playgrounds, restaurants, a movie theater, and the beach.

We immediately became acquainted with the comfortable facilities at the local hospital. The oldest of our boys (4 years old), broke his arm on the very first day in the house. I had to open up our new phone book to find out where exactly the hospital was

located. Later in the year we had the occasion to visit the hospital for a few more days when our third son was born in October 2004. As expected, having three small boys in the house while attending NPS made the adventure all the more exciting.

Of course, the Monterey area is quite possibly as close to paradise as you can have in the USA. The Monterey Bay is lovely, the sunsets over Pebble Beach are just gorgeous, and the area is a veritable garden spot for all kinds of fresh food, including lettuce, strawberries, artichokes, and seafood. The downtown area also featured a farmer's market every Tuesday evening, with festivals (Greek, Italian, Jazz) and several parades throughout the year. The Monterey Bay Aquarium was a minutes away by car or public trolley. The drive down California Highway 1 on the coast is one of the best views in the western world. I enjoyed the opportunity to compete in the Big Sur Marathon twice while there, running the fantastic 26.2 miles up the coastal highway. For you urban dwellers, San Francisco is only a 2½-hour drive, and there is plenty of nightlife downtown. Alas, as the parents of three small boys, we didn't get to know that scene very well.

So after our two-year adventure, we moved our crew back to Alabama, taking up a position with ARL/HRED's office at Redstone Arsenal. In the end, we came away with a great master's degree experience, plenty of California sunshine, a new child, and about 500 pounds of new books from all of the coursework.

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