CME Professional Development Co-Op
A Dedicated Pipeline for Entry-Level Talent at Medtronic

MODEL SUMMARY
The Haley Barbour Center for Manufacturing Excellence (CME) Professional Development Co-Op provides students enrolled in the University of Mississippi CME program an opportunity to apply their classroom skills and knowledge to projects at a major manufacturing operation. Students complete paid co-ops that provide them practical, on-the-job work experience alongside established professionals in their field of study.

BACKGROUND
In 2014, the human resources team at Medtronic Spinal set out to investigate new opportunities for growing its pipeline of entry-level talent. Through research, they learned of the CME Professional Development Co-Op program at the University of Mississippi. After careful review, the team decided to form a partnership with CME. Given Medtronic’s proximity to the CME campus (approximately a one-hour drive from Memphis, TN), the team believed the co-op program would be a great way to support the business’s long-term projects while also identifying qualified entry-level talent.

Established in 2008, the CME undergraduate program at the University of Mississippi provides unique and cutting-edge opportunities for engineering, business and accounting students interested in manufacturing. The interdisciplinary program provides students fundamental knowledge of engineering, combined with an understanding of accounting, communication, human resources, leadership and management — all skills necessary in modern manufacturing. Throughout the program, CME students from multiple degree paths work in teams to solve complex manufacturing problems and create products. Most CME students participate in a two- to three-semester, paid co-op at a CME partner business, such as Medtronic.

PARTNERSHIP
Key partners of the CME co-op program include Baxter International; Caterpillar; GE Aviation; HAECO Americas, LLC; International Paper; Mars Foods; Medtronic; Schultz Extruded Products; Texas Instruments; Thomas & Betts; Toyota; the University of Mississippi; and Viking Range.

KEY:
- A: Apprenticeship
- C: Certification
- CE: Career Expo
- CO: Cooperative Education/Co-op
- CR: Credentials
- CT: Clinical Training/Practicum
- E: Externship
- H: Hands-on Training
- IT: Industry Tour
- I: Internship
- M: Mentorship
- OJT: On-the-Job Training
- OB: Online and Blended Classroom Training
NUTS AND BOLTS

Students apply for the Medtronic co-op by submitting their resumes to the company, and those selected for the next round interview with key members of Medtronic Spinal. These students are also invited to the Medtronic Spinal facility in Memphis for a facility tour and meetings with key staff.

Co-op participants gain valuable work experience that increases in difficulty and responsibility as they advance through the program. Key elements of the program include:

- **Professional Development:** Before participating in a co-op, freshman CME students receive support in developing a professional resume and cover letter, preparing for interviews, and understanding business communication, as well as tips on how to conduct a job search. Through the co-op, students learn how to manage responsibility and work efficiently under pressure.

- **Exposure to Modern Manufacturing:** At Medtronic Spinal, students are exposed to breakthrough technologies used in medical devices. Co-op participants complete stints in finance operations, sourcing engineering and concurrent engineering. In concurrent engineering, students apply their knowledge and skills to develop design transfers and designs for manufacturing.

- **Alignment with CME Academic Phases:** Work experiences during the co-op are aligned with the CME curriculum to provide students hands-on learning and an opportunity to apply skills taught in the classroom.

- **Mentorship:** At Medtronic Spinal, students are matched with a principal-level engineer, who provides knowledge sharing, guidance on the design and manufacturing process, and the opportunity for students to attend key project meetings.

- **New Hire Training:** Medtronic Spinal co-op students complete the same training as new employees, including new-hire orientation and a mini sales representative training. The training provides students a better understanding of the medical device industry, as well as the company, its employees and its customers.

PROGRAM BENEFITS, RESULTS AND OUTCOMES

The CME co-op student benefits and outcomes include:

- **Career Planning and Guidance:** Through career planning and guidance, students are exposed to various careers within manufacturing.

- **Paid Co-Op Position with Practical On-the-Job Training.**

- **Opportunities To Interact and Network with Potential Future Employers.**

- **Increased Motivation and a Stronger Desire To Learn.**

- **Transferable Interpersonal and Intrapersonal Skills.**

- **Credit Hours Toward an Undergraduate Degree.**

The CME co-op program employer benefits and outcomes include:

- **Support for Long-Term Business Projects:** The length of the co-op is advantageous to the business, as it provides high-quality, motivated students to support long-term projects that typically cannot be assigned to a summer intern.

- **Opportunities for Staff To Serve as Leaders and Mentors:** For the co-op managers, the program provides opportunities to lead and mentor a potential future employee.

“It has been extremely gratifying to see these talented individuals develop right in our ‘backyard’ with an opportunity to recruit them for full-time employment upon graduation. With the talent and successes that the CME program brings to Medtronic, this strategy has been secured to support our overall business initiatives going forward.”

— Dominic Presty, Senior Director, AMET and Core Spine, and Jeff Cobb, Senior Engineering Manager, Medtronic
Ability for Key Staff To Focus on Strategic Business Projects: The program opens up more time for Medtronic Spinal engineers to focus on strategic work as the co-op students perform other project tasks.

Funding Support: Grant funding is available to companies to help alleviate financial barriers associated with hosting a co-op at their facility.

Enhanced Relationship with the University of Mississippi.

SUSTAINABILITY AND OVERCOMING IMPLEMENTATION CHALLENGES

The vision of CME is to work with business partners to improve business conditions, serve partner company employees and promote economic growth. The CME partnership with Medtronic Spinal is a success story for the program: CME co-op students support the design and development of major medical devices that help alleviate pain, restore health and extend life, even as the students learn valuable industry-specific skills.

The Medtronic Spinal team places great importance on the relationship with CME and finds the program beneficial for their recruiting efforts. CME and Medtronic Spinal staff members are collaborating on how to improve the partnership, Medtronic Spinal’s co-op program and the potential to hire co-op students upon graduation.

WORDS OF WISDOM

Recommendations for organizations interested in building a similar program include:

Make It Easy for Companies To Participate: CME’s attentive and invested staff make supporting students through a co-op easy for Medtronic Spinal. Building a talent pipeline is important, but Medtronic Spinal’s human resources team has other daily tasks and deliverables to support business operations that take precedence over running the co-op program. Because the process is seamless, they are able to manage co-op program logistics with little time and resources. In total, the team spent less than 30 hours on logistics relating to the co-op, which included interviewing co-op students, meeting with CME staff, conducting background checks and hosting student tours of the Memphis facility.

Use Work-and-Learn Programs as a Recruiting Tool: Medtronic Spinal wants to make more students aware of the medical device industry. Through the co-op program, the Medtronic Spinal team can illustrate for students the process of designing, developing and manufacturing new medical devices. The company can also lay out a path for students to an in-demand career field.

“Partnering with a professional and dedicated institution like the University of Mississippi and their Center of Manufacturing Excellence (CME) program has allowed Medtronic Spinal’s Advanced Manufacturing Engineering Team to select highly talented individuals to work on key growth programs and accelerate associated deliverables. This has clearly been a ‘win/win’ scenario for both entities and has been so successful that we are looking to expand our partnership with the University of Mississippi in other key areas of Operations as quickly as possible,” said Dominic Presty, senior director, AMET and Core Spine, and Jeff Cobb, senior engineering manager, Medtronic.

INFORMATION, TOOLS AND RESOURCES


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Descriptions of Common Work-and-Learn Models

A Glossary of Key Terms

Following are descriptions of the most common and effective work-and-learn models that are a part of business and industry programs nationwide.

**Apprenticeship**
An apprenticeship is a unique, flexible training system that combines job-related technical instruction with structured on-the-job learning experiences. It provides a unique combination of structured learning with on-the-job training from an assigned mentor. Related instruction, technical training or other certified training is provided by apprenticeship training centers, technical schools, community colleges, and/or institutions employing distance and computer-based learning approaches. The goal is to provide workers with advanced skill sets that meet the specific needs of employers. In many cases, these programs provide apprentices the opportunity to simultaneously obtain secondary and postsecondary degrees, as well as credentials issued by third-party industry organizations. (Source: U.S. Department of Labor)

**Clinical Training/Practicum**
Clinical training combines classroom learning with supervised hands-on immersion experiences in specific fields, mostly in industries that involve human services. In health fields, clinical training is founded on actual observation and lab instruction and/or treatment of patients, as distinguished from theoretical or experimental training. The training is usually highly specialized and includes coursework specific to performing functions and tasks in an actual workplace. (Sources: Siemens Clinical Training & Continuing Education; Clinical Training Institute)

**Cooperative Education/Co-Op**
Cooperative education is the integration of classroom theory with practical work experience, through which students alternate attendance at school with periods of professional employment. At the high school level, the periods of classroom and work-based experience are usually half-days. In higher education, the alternation is most often on a longer time scale. Cooperative education programs enable students to apply technical skills already acquired through the education institution in a real-world workplace setting. Traditionally, cooperative education has been used to aid a student’s transition from school to work, while providing participating employers an opportunity to attract, evaluate, train and ultimately employ a ready source of educated and skilled employees. (Sources: Center for Manufacturing Excellence, University of Mississippi; University of Cincinnati)

**Career Fair, Career Expo, Job Fair**
A career fair, also called a career expo or job fair, is an event held for employers and recruiters to meet with potential job candidates. Industry representatives set up exhibition booths — usually at a secondary or postsecondary institution — where students and job seekers can find information about different career fields, training opportunities and jobs currently available. Career fairs give employers an opportunity to interact with future job candidates and make direct contact with students who are making decisions about what education, training and career to pursue. Quality career fairs offer hands-on activities to participants, allowing them to see firsthand what a job in the industry entails.
Externship
An externship is typically a training program offered by educational institutions and private businesses that gives students brief practical experiences in their field of study and insight and knowledge in a particular career field. Often shorter term than internships, externships are intensive career learning experiences that typically range from two days to two weeks. Although more immersive and structured than job shadowing, these experiences provide the opportunity for students to see firsthand the work activities and responsibilities in various professions and industries. The experience should provide the learner a greater sense of the knowledge, skills and attributes of people who thrive within that given career pathway and industry sector and a complete experience of day-to-day work life.

Hands-On Training
Hands-on training provides student learners an opportunity to use their hands to perform tasks. This training aims to simulate conditions that are as close as possible to real work conditions while avoiding the risks commonly associated with a new employee. In hands-on training, participants typically have the opportunity for repeated practice.

Industry Tour
Companies offer guided tours of their facilities to let students, parents and the general public witness firsthand the day-to-day operations of the business. Typically lasting up to two hours, tours are led by knowledgeable staff members who show and describe the companies’ processes, products and protocols, as well as point out the skills and training needed for different jobs. Quality industry tours typically result in greater awareness of the company and the industry and increased engagement with the local community, schools and future employees.

Internship
An internship is a formal program that provides practical experience for learners in an occupation or profession, during which the learner is immersed in a work situation for a limited period of time. Internships can be paid or unpaid and usually accompany or relate to academic coursework or training. A quality internship provides the learner an increasingly thorough grasp of the career field, extensive experience in specific job functions, application of education and training to specific duties, and a feel for what it is like to work on a daily basis in the industry. While not always intended to result in employment at the sponsoring company, internships help employers expose potential workers to their workplace and industry and recruit, screen and test-fit future job candidates before they are hired full time.

Job Shadowing
Job shadowing is a work experience option through which students learn about a job by walking through the working day as a shadow to a competent worker. The job shadowing work experience is a temporary, unpaid exposure to the workplace in an occupational area of interest to the student. Students witness firsthand the work environment, employability and occupational skills in practice, the value of professional training, and potential career options. Job shadowing is designed to increase career awareness, help model student behavior through examples, and reinforce for the student the link between classroom learning and work requirements. Almost any workplace is a potential job-shadowing site. (Source: Paris, K., and Mason, S. (1995). Planning and Implementing Youth Apprenticeship and Work-Based Learning. Madison, WI: University of Wisconsin, Center on Education and Work)

Mentorship
Mentorship is the coupling of a novice with an older, more experienced professional wherein the expert shares knowledge and experience with the novice over the course of time. Mentorship can be either formal or informal and can happen face to face; online; or in conjunction with other work-and-learn opportunities, such as internships and job shadowing. Mentorships help mentored youth improve their overall academic achievement and develop the necessary skills to enter or continue on a career path. They also provide guidance for decision making. Quality mentorships usually involve mentee training and alignment to the company’s culture and goals.
On-the-Job Training (OJT)
OJT is training by an employer that is provided to a paid participant (either an incoming or incumbent employee) while engaged in productive work in a job that provides knowledge or skills essential to the adequate performance of the job. OJT is usually limited in duration, as appropriate to the occupation for which the participant is being trained, taking into account the content of the training, the prior work experience of the participant and the service strategy of the participant, as appropriate. (Source: Workforce Investment Act)

Pre-apprenticeship
Pre-apprenticeship is defined by the Employment and Training Administration as “a program or set of strategies [that is] designed to prepare individuals to enter and succeed in a Registered Apprenticeship program and has a documented partnership with at least one, if not more, Registered Apprenticeship program(s).” Since the pre-apprenticeship model is meant to prepare learners to enter a registered apprenticeship, a quality model provides sufficient applied academic training, as well as industry-based technical skills training and practice, to ensure that students transition successfully into an apprenticeship.

Registered Apprenticeship
A registered apprenticeship encompasses the details and benefits listed in the “Apprenticeship” definition. Additionally, it meets national apprenticeship standards outlined by the registration process with the U.S. Department of Labor (DOL) Office of Apprenticeship or through a state apprenticeship agency. Upon completion of a registered apprenticeship program, participants receive a portable credential (provided by DOL or the state apprenticeship agency) that certifies occupational proficiency as a journey worker for the selected occupation. For more information on the DOL registered apprenticeship program, please visit: [www.dol.gov/apprenticeship](http://www.dol.gov/apprenticeship). (Source: U.S. Department of Labor)

Returnship
A returnship is an internship specifically designed for older professionals who have been out of the workforce for an extended period of time to re-enter a career. In many cases, they are designed to help these individuals refresh their skill sets and learn new technologies before returning as full-time employees. Often lasting around 10 weeks, a returnship provides individuals with an opportunity to sharpen their skills in a given career path or pursue new areas of expertise in a work environment that may have changed significantly since their last experience as an employee. Returnships also give employers the opportunity to screen returning experienced applicants before hiring them full time. (Sources: Goldman Sachs; CareerBuilder)

RESOURCES
- 21st Century Competency-Based Apprenticeship Resources
- Georgetown University Center on Education and the Workforce: Learning While Earning: The New Normal
- National Network of Business and Industry Associations: Common Employability Skills
- National Network of Business and Industry Associations: Grads of Life ROI Calculator
- Change the Equation: Work-Based Learning: An Employer’s Guide
- U.S. Department of Labor Office of Apprenticeship
  [www.dol.gov/apprenticeship](http://www.dol.gov/apprenticeship)
Contributors

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