Members Present: Mr. Albert Louer, Ms. Elizabeth S. Tai, Mr. John McMillan, Jr., Ms. Christine Gergely, Mr. Robert Harper

College Staff Present: Dr. Lonnie Schaffer, Vice President for Academic Affairs
Dr. Dan Lufkin, Vice President for Student Affairs

Guest: Mrs. Patricia Harris

Committee Chair, Ms. Tai, called the meeting to order at 4:15 p.m.

Minutes from September 24, 2014

RECOMMENDED ACTION: It was moved and seconded to approve the minutes from the September 24, 2014 meeting as submitted. The motion was approved.

Presentation and Discussion of Proposed CSC and AAS degree in Advanced Integrated Manufacturing

Dr. Schaffer introduced Mrs. Patricia Harris, who presented an overview of the College’s proposed new Associate of Applied Science degree program and Career Studies Certificate program in Advanced Integrated Manufacturing. The following are highlights of the presentation, taken from the College’s formal degree proposal.

The Associate of Applied Science degree in Advanced Integrated Manufacturing Technology is designed to develop multi-skilled technicians and technologists with an understanding of the complete manufacturing process and emerging technologies of advanced materials, digital manufacturing and advanced sensors, as well as the capability for higher level problem-solving, innovation, and leadership. Graduates will have the capacity and adaptability to perform as a contributing member of a team of researchers, engineers, technicians and trades craftsmen in the advanced manufacturing environment, developing new technology applications for the future of manufacturing on the Virginia Peninsula. The program will utilize internships and co-op opportunities with industry partners, rotating students through positions that meet the program learning outcomes, and graduates will demonstrate personal, academic and workplace competencies that are highly sought after by industry partners.

Thomas Nelson has existing A.A.S. programs in mechanical engineering technology and in electronics with a specialization in electrical engineering technology that support manufacturing and offer transfer pathways into related baccalaureate programs. Courses in robotics, composites, additive manufacturing, instrumentation, and programmable logic controllers (PLCs) have been developed and included in these programs. Thomas Nelson also has demonstrated success in offering co-op programs that include rotational assignments at NASA.
Langley Research Center, certifications by SpaceTEC as Certified Aerospace Technicians, and co-op hours applied toward apprenticeships at NASA, thereby reducing the hours required for apprenticeship completion by 25%. The proposed degree in Advanced Integrated Manufacturing is modeled on the TNCC/NASA/SpaceTEC program, which has a 100% pass rate for graduates on the national certification exam – an exam that nationally has a 35% pass rate.

It is also important to note that none of the Advanced Technology Centers visited across the nation by the College’s AIM Core Team had a focus for a multi-skilled technologist who could adapt to changing technologies and apply problem solving skills across multiple areas of the manufacturing environment. Graduates of Thomas Nelson’s Advanced Integrated Manufacturing Technology degree program will be highly qualified, multi-skilled technicians in today’s advanced manufacturing environment and capable of transitioning effectively into manufacturing positions of the future.

Students interested in pursuing the Advanced Integrated Manufacturing Technology degree program will be advised to enroll first in the proposed Advanced Integrated Manufacturing Technology Career Studies Certificate (CSC). The CSC includes two introductory courses from electronics, mechanical engineering technology and/or CADD, and college level courses in English composition (ENG 111) and pre-calculus (MTH 163), with students entering the program based on placement or completion of developmental prerequisites. Students who successfully complete the CSC become eligible for selection into the degree program.

To ensure success of the AIM degree program and meet the high expectations of the industry partners for students placed into co-ops, internships and apprenticeship positions, retention and graduation results must exceed 75%. Non-completers will jeopardize industry investment in the program and negatively impact future participation and expansion. To control the variables that impact program and student success, the degree program will be based on a selective admissions, cohort model that will be developed in partnership with industry. Cohorts of 12 to 16 students, based on availability and commitment of industry work-based learning opportunities, will be accepted annually beginning January 2016, with future expansion possible for cohorts to begin in both fall and spring semesters once the AIM Center is constructed. Selection into the cohort will be determined by application, GPA, completion of specific courses, and an interview. The interview will be conducted by a committee chaired by the program director with representation of two engineering technology faculty members and two industry partners selected from the AIM Advisory Committee.

Students who complete the first semester prerequisite courses with a GPA determined by the AIM Advisory Board and earn a C or better in each course, will be eligible to apply for acceptance into the AIM cohort. Faculty recommendations will be utilized in the selection process and a satisfactory background check will also be included so that students will be eligible for participation in the co-op and internship requirements. Students will also be advised of potential drug and alcohol testing during the co-op and internships.
Students will be eligible to apply for acceptance to an AIM cohort for one year following completion of the prerequisite courses, and all courses must have been completed within the past three (3) years. Transfer credit will be accepted, but only courses completed at Thomas Nelson may be used in the GPA calculation. Students who do not meet these requirements, or who are not accepted into the cohort, will have the option to select another A.A.S. degree program in engineering technology such as electronics, electrical engineering technology, mechanical engineering technology, industrial engineering technology, or computer-aided drafting and design.

Once accepted into the Advanced Integrated Manufacturing Technology program, the students in the cohort will be assigned consecutive three month co-op rotations for the duration of the program. These assignments provided by industry partners on the Virginia Peninsula may be at one or more industry partners and will include the technical areas of composites, machining, additive manufacturing and robotics. Students are expected to gain on-the-job experience in multiple areas that align with the Advanced Integrated Manufacturing Technology program with program objectives met and enhanced through these on-the-job (OJT) experiences.

A new course, IND 298, provides the vehicle for students to demonstrate overall competency in advanced manufacturing and in the specific operations they have experienced through the co-op/internship assignments. Under the supervision of a faculty advisor and an industry mentor, and working as part of a team, students will select and successfully carry out a major project in advanced manufacturing. They will develop a project that incorporates all the program outcomes for the Advanced Integrated Manufacturing Technology degree and demonstrates their ability to make a valuable contribution to the project team. Students may be given a problem to solve or may have the opportunity to suggest a comparable project. Examples will be provided by the faculty and the industry partner and approval of the project is required prior to beginning. Final grades in the course will be based on a rubric that is developed for each project and the rubric will include ratings for teamwork, design, build and integration of technology. A final presentation to the faculty supervisor, other invited faculty and industry partners will be a required activity with faculty and industry partners providing an evaluation to the faculty supervisor. Students must earn a grade of C or better in the course.

Within the Science, Engineering and Technology Division at Thomas Nelson, there are five full-time faculty positions in engineering technology: one in mechanical engineering technology, one in electronics technology, one in industrial engineering technology, two in computer aided drafting and design. Another full-time position in mechanical engineering technology was recently vacated and has been reallocated to a faculty position in Advanced Integrated Manufacturing Technology. Faculty may be assigned to teach their respective courses in the AIM Technology degree program.
Existing labs in Hastings Hall on the Hampton campus include two electronics labs, one mechanical/composites lab, one industrial engineering lab (PLCs and robotics) and one computer aided drafting and design lab with additive manufacturing capability. A Cisco lab has been relocated to provide a new lab for Advanced Integrated Manufacturing, and another room currently used for storage may also be converted to a lab. These new areas will provide additional space needed for new equipment in instrumentation/metrology, robotics and for expansion of additive manufacturing’s 3D printers.

Thomas Nelson’s composites and electronics labs are updated and do not require additional equipment to accommodate the AIM program. The TAACCCT grant has $502,000 in equipment funds. New machining and robotics equipment purchased by TAACCCT grant funds will be located at the Peninsula Workforce Development Center and will be leveraged for use in AIM courses. An additional $500,000 is available from the Education Foundation for equipment for the Advanced Integrated Manufacturing Technology program, as needed, and equipment purchases are planned for a laser tracker and coordinate measuring machine.

The A.A.S. degree in Advanced Integrated Manufacturing Technology can operate within this existing footprint with one cohort beginning each January. When an AIM Center is funded, either by public/private partnership or another funding model, the program will move to the new facility where additional cohorts, new specializations, short term training, and career studies certificates may all be added.

Discussion followed. Mr. McMillan expressed a concern about the requirement for a “C” average to be eligible for admission and questioned whether this low standard would jeopardize success rates in the programs. He was assured that mentoring will be available to assist students, and a holistic approach will be used to select candidates based on their ability to demonstrate essential employment skills as well as academic success.

RECOMMENDED ACTION: It was moved and seconded to recommend approval of the Career Studies Certificate in Advanced Integrated Manufacturing. The motion was approved.

RECOMMENDED ACTION: It was moved and seconded to recommend approval of the Associate of Applied Science degree program in Advanced Integrated Manufacturing. The motion was approved.

Adjournment

It was moved and seconded to adjourn the meeting. The motion was approved and the meeting adjourned at 5:10 p.m.

Respectfully submitted,

Dr. Lonnie J. Schaffer
Vice President for Academic Affairs