

“DIGITALLY ENHANCING AMERICA’S COMMUNITY COLLEGES STRATEGIC OPPORTUNITIES FOR COMPUTING EDUCATION”

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STRATEGIC PLANNING TEMPLATE



ASSOCIATION FOR COMPUTING MACHINERY COMM. FOR COMPUTING EDUCATION IN COMMUNITY COLLEGES WWW.ACMCCECC.ORG

Instructions: (1) Select the Finding(s) to target for action at your institution; (2) Visit acmcecc.org for potential initiatives and funding opportunities, as well as additional computing education resources; (3) Create initiatives responsive to the selected Findings; (4) Designate key personnel to pursue each of your initiatives; (5) Indicate timeframe, resources needed and possible funding sources.

1 PROMOTING COMPUTING EDUCATION IN COMMUNITY COLLEGES

▼ CHALLENGE ... AMERICA'S TWO-YEAR COLLEGE COMPUTING EDUCATION PROGRAMS ARE FREQUENTLY UNDERVALUED. HIGH-SCHOOL GRADUATES MAY NOT CONSIDER THEM AS THEIR FIRST OPTION FOR COLLEGE. BACCALAUREATE INSTITUTIONS MAY NOT EMBRACE THEM AS SOURCES OF TRANSFER STUDENTS INTO UPPER-DIVISION COMPUTING PROGRAMS. AND EMPLOYERS MAY NOT PERCEIVE THEM AS PRODUCERS OF QUALIFIED GRADUATES. MISIMPRESSIONS ARISE FROM NEGATIVE STEREOTYPES AND THE FAILURE TO RECOGNIZE THE VALUE OF ASSOCIATE DEGREES IN COMPUTING.

▲ OPPORTUNITY ... COMPUTING FACULTY, PROGRAM COORDINATORS AND ADMINISTRATORS IN TWO-YEAR COLLEGES SHOULD COLLABORATE AND COMMUNICATE WITH COLLEAGUES IN OTHER EDUCATIONAL INSTITUTIONS AND IN THE BUSINESS SECTOR TO RAISE AWARENESS OF THE PROGRAM OUTCOMES AND ASSESSMENTS OF STUDENT LEARNING THAT DEFINE ASSOCIATE-DEGREE COMPUTING PROGRAMS.

2 EMBEDDING COMPUTING EDUCATION IN OUR CHANGING SOCIETY

▼ CHALLENGE ... COMPUTING EDUCATORS ARE CHALLENGED BY EXTRAORDINARY, TECHNOLOGY-DRIVEN SOCIETAL CHANGES TO EXPAND THEIR ROLES BEYOND THE TRADITIONAL DELIVERY OF DISCIPLINE-SPECIFIC COURSE CONTENT.

▲ OPPORTUNITY ... TWO-YEAR COLLEGE COMPUTING FACULTY SHOULD ENGAGE THEIR STUDENTS IN IMPORTANT DISCUSSIONS ON INFORMATION ASSURANCE, PRIVACY RIGHTS AND INTELLECTUAL PROPERTY. THEY SHOULD PROMOTE THOUGHTFUL CONSIDERATION OF SUSTAINABILITY ISSUES, PREPARE STUDENTS FOR PROFOUND SHIFTS IN THE LABOR MARKET, AND ADVANCE INTER-DISCIPLINARY COMPUTING. WITH THEIR HIGH SCHOOL AND BACCALAUREATE COLLEAGUES, THEY SHOULD INFLUENCE DECISIONS ON THE NATION'S APPROACH TO COMPUTING EDUCATION.

3 DEMYSTIFYING COMPUTING DISCIPLINES AND PROFESSIONS

▼ CHALLENGE ... THE MÉLANGE OF COURSE AND PROGRAM TITLES AND REQUIREMENTS THROUGHOUT COMPUTING EDUCATION CONFOUNDS STUDENTS, PARENTS, FACULTY, ADVISORS, GUIDANCE COUNSELORS, ADMINISTRATORS, EMPLOYERS AND PRACTITIONERS.

▲ OPPORTUNITY ... STAKEHOLDERS SHOULD COLLABORATE TO PRODUCE CLEAR AND CONSISTENT GUIDANCE REGARDING THE BREADTH AND DEPTH OF COMPUTING EDUCATION AND CAREERS. IMPROVED STANDARDIZATION SHOULD BE PURSUED TO ENABLE STUDENTS TO PROGRESS ALONG WELL-DEFINED PATHWAYS LEADING FROM THEIR INITIAL INTEREST IN COMPUTING TO ATTAINING A COLLEGE DEGREE TO LAUNCHING A CAREER IN COMPUTING.

4 ACTUALIZING PATHWAYS IN COMPUTING EDUCATION

▼ CHALLENGE ... STUDENTS ARE LIMITED IN THEIR OPPORTUNITIES TO AVAIL THEMSELVES OF COMPUTING CURRICULA IN A COST-EFFECTIVE AND TIME-EFFICIENT MANNER DUE TO INCONSISTENCIES AND COMPLEXITIES THAT SPAN STUDENT PROGRESSION FROM HIGH SCHOOL TO TWO-YEAR COLLEGE PROGRAM COMPLETION TO BACCALAUREATE ARTICULATION AND TRANSFER.

▲ OPPORTUNITY ... EDUCATIONAL INSTITUTIONS SHOULD EMPLOY MULTI-FACETED STRATEGIES THAT MOVE STUDENTS SEAMLESSLY THROUGH THEIR COMPUTING EDUCATION STUDIES FROM THE SECONDARY LEVEL THROUGH THE ASSOCIATE DEGREE TO THE BACCALAUREATE DEGREE.

5 ASSESSING INCOMING COMPUTING STUDENTS

▼ CHALLENGE ... COMMUNITY COLLEGES ARE CHALLENGED TO EFFECTIVELY PLACE INCOMING STUDENTS INTO COMPUTING COURSE SEQUENCES AND PROGRAMS, MAINLY BECAUSE TODAY'S STUDENTS HAVE ACQUIRED COMPUTING SKILLS THROUGH FORMAL, INFORMAL AND NON-FORMAL EDUCATION.

▲ OPPORTUNITY ... HIGH SCHOOLS AND COMMUNITY COLLEGES SHOULD CREATE PATHWAYS, LINKAGES AND PARTNERSHIPS BETWEEN THEIR SECONDARY AND POST-SECONDARY COMPUTING COURSES AND PROGRAMS. COMMUNITY COLLEGES SHOULD DEVELOP MEANINGFUL ASSESSMENT TOOLS THAT MEASURE THE COMPUTING KNOWLEDGE AND ABILITIES OF ALL INCOMING STUDENTS.

6 FACILITATING STUDENT COMPLETION OF COMPUTING PROGRAMS

▼ CHALLENGE ... TWO-YEAR COLLEGE STUDENTS ENCOUNTER VARIED OBSTACLES TO THEIR TIMELY COMPLETION OF COMPUTING PROGRAM REQUIREMENTS, INCLUDING INSUFFICIENT ACADEMIC PREPARATION, ESPECIALLY IN MATHEMATICS; MISMATCHES BETWEEN THEIR LEARNING STYLES AND THE RIGOR OF COMPUTER STUDIES; MISALIGNMENT BETWEEN THEIR ACADEMIC PATHS AND THEIR CAREER ASPIRATIONS IN COMPUTING FIELDS; AND LIMITED OPPORTUNITIES TO FULFILL DEGREE REQUIREMENTS.

▲ OPPORTUNITY ... TWO-YEAR COLLEGES SHOULD PURSUE INNOVATIVE APPROACHES TO ACADEMIC AND STUDENT SUPPORT SERVICES, CREATIVE STRATEGIES FOR PROVIDING GUIDANCE ON COMPUTING CAREERS AND ASSOCIATED CURRICULA, AND VARIED AVENUES BY WHICH STUDENTS CAN SATISFY PROGRAM REQUIREMENTS.

7 CULTIVATING STUDENT DIVERSITY IN COMPUTING

▼ CHALLENGE ... GENDER- AND CULTURE-BASED STIGMAS ASSOCIATED WITH CERTAIN TECHNICAL DISCIPLINES, AS WELL AS INSUFFICIENT OPPORTUNITIES FOR STUDENTS TO VISUALIZE THEMSELVES IN COMPUTING CAREERS, HINDER A RICH DIVERSITY OF STUDENTS FROM ENROLLING IN COMPUTING PROGRAMS. FROM MIDDLE SCHOOL UNTIL THEY ENTER COLLEGE, THE ABSENCE OF POSITIVE ROLE MODELS IN COMPUTING NEGATIVELY IMPACTS STUDENT ATTITUDES AND PERCEPTIONS, ESPECIALLY AMONG FEMALES.

▲ OPPORTUNITY ... EDUCATIONAL INSTITUTIONS, PROFESSIONAL ORGANIZATIONS, AND BUSINESS AND INDUSTRY SHOULD PARTNER TO CREATE NURTURING EXPERIENCES IN TECHNOLOGY-RELATED FIELDS FOR STUDENTS, ESPECIALLY FEMALES AND INDIVIDUALS FROM UNDERREPRESENTED GROUPS. COMPUTING PROFESSIONALS SHOULD SERVE AS MENTORS TO STUDENTS TO PROMOTE THE ATTRACTIVE FINANCIAL AND SOCIALLY-REWARDING ASPECTS OF COMPUTING CAREERS.

8 ENGAGING COMPUTING STUDENTS OF TOMORROW

▼ CHALLENGE ... STUDENT ENGAGEMENT WITH COMPUTER TECHNOLOGIES SUCH AS SOCIAL NETWORKING, ONLINE MEDIA AND VIRTUAL WORLDS, AS WELL AS STUDENTS' ENTHUSIASM FOR VIDEO GAMES AND CONSUMER ELECTRONICS, CHALLENGE THE TRADITIONAL APPROACHES TO CLASSROOM-BASED INSTRUCTION IN COMPUTER EDUCATION.

▲ OPPORTUNITY ... COMMUNITY COLLEGE COMPUTING FACULTY SHOULD PROMOTE INNOVATION IN INSTRUCTIONAL DESIGN AND DELIVERY BY PROTOTYPING, MASTERING AND IMPLEMENTING PIONEERING TECHNOLOGY-BASED TEACHING AND LEARNING STRATEGIES AND TECHNIQUES

9 APPLYING LEARNING RESEARCH TO COMPUTING EDUCATION

▼ CHALLENGE ... THERE IS INSUFFICIENT INFORMATION AVAILABLE TO TWO-YEAR COLLEGE COMPUTING FACULTY ABOUT HOW STUDENTS TODAY SYNTHESIZE TECHNICAL KNOWLEDGE AND ACQUIRE THE INDUCTIVE AND DEDUCTIVE REASONING SKILLS REQUIRED OF COMPUTING PROFESSIONALS.

▲ OPPORTUNITY ... COGNITIVE LEARNING RESEARCH IN COMPUTING SHOULD BE USED TO POSITIVELY INFORM AND INFLUENCE FACULTY APPROACHES TO COURSE DESIGN AND DELIVERY FOR ACTIVE LEARNING COMPUTING EDUCATION.

10 PIONEERING ASSESSMENT STRATEGIES FOR COMPUTING COURSEWORK

▼ CHALLENGE ... STUDENTS ARE LIMITED IN THEIR OPPORTUNITIES TO AVAIL THEMSELVES OF COMPUTING CURRICULA IN A COST-EFFECTIVE AND TIME-EFFICIENT MANNER DUE TO INCONSISTENCIES AND COMPLEXITIES THAT SPAN STUDENT PROGRESSION FROM HIGH SCHOOL TO TWO-YEAR COLLEGE PROGRAM COMPLETION TO BACCALAUREATE ARTICULATION AND TRANSFER.

▲ OPPORTUNITY ... EDUCATIONAL INSTITUTIONS SHOULD EMPLOY MULTI-FACETED STRATEGIES THAT MOVE STUDENTS SEAMLESSLY THROUGH THEIR COMPUTING EDUCATION STUDIES FROM THE SECONDARY LEVEL THROUGH THE ASSOCIATE DEGREE TO THE BACCALAUREATE DEGREE.

11 INNOVATING INSTRUCTIONAL MATERIALS FOR COMPUTING COURSES

▼ CHALLENGE ... CONVENTIONAL TEXTBOOK-BASED APPROACHES TO INSTRUCTIONAL MATERIALS THAT ACCOMPANY COMPUTING COURSEWORK ARE FRAUGHT WITH SHORTCOMINGS, INCLUDING AFFORDABILITY, ACCESSIBILITY, FLEXIBILITY AND CURRENCY.

▲ OPPORTUNITY ... STAKEHOLDERS, INCLUDING COMPUTING FACULTY AND STUDENTS, PUBLISHERS AND BOOKSTORES, TECHNOLOGY MANUFACTURERS AND VENDORS, AND PROFESSIONAL AND COMPUTING ACCREDITING ORGANIZATIONS, SHOULD PARTICIPATE IN PROTOTYPING INNOVATIVE APPROACHES TO COURSE AND LEARNING MATERIALS THAT APPROPRIATELY SUPPORT COMPUTING EDUCATION.

12 EMBRACING ANYTIME, ANYWHERE COMPUTING EDUCATION

▼ CHALLENGE ... TWO-YEAR COLLEGE COMPUTING FACULTY ARE CHALLENGED TO REMAIN RESPONSIVE TO THE GROWING NOTION OF “ANYTIME, ANYWHERE” LEARNING NOW MADE POSSIBLE BY SOPHISTICATED MOBILE DEVICES AND WIDESPREAD USE OF THE INTERNET.

▲ OPPORTUNITY ... COMPUTING FACULTY SHOULD TAKE ADVANTAGE OF THE POTENTIAL FOR SYMBIOSIS BETWEEN TECHNOLOGY TOOLS, RESOURCES AND SERVICES NOW READILY AVAILABLE TO STUDENTS AND THE INSTRUCTIONAL ACTIVITIES, LEARNING MATERIALS AND AUTHENTIC ASSESSMENT TECHNIQUES APPROPRIATE TO COMPUTING EDUCATION.

13 KEEPING INFRASTRUCTURE CURRENT FOR COMPUTING PROGRAMS

▼ CHALLENGE ... TWO-YEAR COLLEGES ARE CHALLENGED TO PROVIDE AND MAINTAIN THE TEACHING AND LEARNING INFRASTRUCTURE APPROPRIATE TO COMPUTING EDUCATION, INCLUDING COMPUTER CLASSROOM AND LABORATORY FACILITIES, DESKTOP HARDWARE AND SOFTWARE RESOURCES FOR STUDENTS AND FACULTY, MOBILE AND DISTANCE-LEARNING SYSTEMS, AND TECHNOLOGY ACCESS.

▲ OPPORTUNITY ... COMMUNITY COLLEGES SHOULD ENSURE THAT THEIR COMPUTING EDUCATION RESOURCES AND FACILITIES ARE ON PAR WITH CURRENT INDUSTRY HARDWARE AND SOFTWARE STANDARDS AND ARE RESPONSIVE TO THE NEEDS OF LOCAL BUSINESS AND INDUSTRY, AS WELL AS TO THE REQUIREMENTS OF TRANSFER INSTITUTIONS. INSTITUTIONS SHOULD ALSO RECOGNIZE THE INCREASING ROLE OF NON-TRADITIONAL OR INFORMAL LEARNING ENVIRONMENTS AND PURSUE INITIATIVES THAT PROMOTE AND FOSTER SUCH SETTINGS.

14 PREPARING STUDENTS FOR THE COMPUTING CAREERS OF THE FUTURE

▼ CHALLENGE ... PREPARING TWO-YEAR COLLEGE COMPUTING GRADUATES FOR JOBS THAT DO NOT YET EXIST IS INHERENTLY CHALLENGING.

▲ OPPORTUNITY ... TWO-YEAR COLLEGE COMPUTING FACULTY SHOULD MAKE CERTAIN THAT THEIR GRADUATES ARE PREPARED TO ADAPT THEIR COMPUTING EDUCATION TO AN EVER-CHANGING EMPLOYMENT ENVIRONMENT BY ENSURING THAT THEIR CURRICULA AND LEARNING ACTIVITIES EQUIP STUDENTS WITH STRATEGIES AND TECHNIQUES FOR ACQUIRING AND SYNTHESIZING INFORMATION. FACULTY SHOULD CULTIVATE STUDENTS' INDEPENDENT THINKING AND PROBLEM-SOLVING ABILITIES AND PROMOTE BUSINESS PROCESS ACUMEN.

15 ADDRESSING THE COMPREHENSIVE NEEDS OF EMPLOYERS

▼ CHALLENGE ... TWO-YEAR COLLEGES ARE CHALLENGED TO PRODUCE GRADUATES FROM SPECIALIZED, CAREER-ORIENTED COMPUTING PROGRAMS THAT SATISFY EMPLOYERS' CONSTANTLY CHANGING NEEDS, DEMANDS FOR KNOWLEDGE BOTH BROAD AND DEEP, AND EXPECTATIONS FOR COMPLEMENTARY WORKPLACE SKILLS.

▲ OPPORTUNITY ... TWO-YEAR COLLEGES SHOULD FURTHER LEVERAGE THEIR PARTNERSHIPS WITH LOCAL BUSINESS AND INDUSTRY TO PROVIDE EMPLOYERS WITH A DIVERSE CANDIDATE POOL WITH COMPUTING EXPERTISE, BUSINESS PROCESS AWARENESS, A SENSE OF PROFESSIONALISM, AND “SOFT SKILLS,” INCLUDING THE ABILITY TO COMMUNICATE AND WORK EFFECTIVELY AS TEAM MEMBERS.

16 RESPONDING TO COMPETING DEMANDS ON COMPUTING CURRICULA

▼ CHALLENGE ... TWO-YEAR COLLEGE COMPUTING FACULTY ARE CHALLENGED TO KEEP THEIR PROGRAMS OF STUDY RESPONSIVE TO THE EXTRAORDINARY RATE OF TECHNOLOGICAL CHANGE, TO THE DEMANDS OF INDUSTRY-BASED CURRICULA AND COMPUTING CERTIFICATIONS, AND TO THE TRANSFER REQUIREMENTS OF BACCALAUREATE COMPUTING PROGRAMS.

▲ OPPORTUNITY ... COMMUNITY COLLEGES SHOULD PURSUE INNOVATIVE APPROACHES TO COURSE AND CURRICULUM DESIGN FOR BOTH CAREER- AND TRANSFER-ORIENTED COMPUTING PROGRAMS. TWO- AND FOUR-YEAR COLLEGE COMPUTING FACULTY, INDUSTRY PRACTITIONERS AND PROFESSIONAL AND CERTIFYING ORGANIZATIONS SHOULD PARTNER TO CRAFT WELL-DEFINED AND RECOGNIZED COMPUTING PROGRAM OUTCOMES.

17 CONTEXTUALIZING COMPUTING STUDIES

▼ CHALLENGE ... TWO-YEAR COLLEGES ARE CHALLENGED TO ENSURE THAT COMPUTING PROGRAMS ENABLE STUDENTS TO CONTEXTUALIZE THEIR STUDIES.

▲ OPPORTUNITY ... TWO-YEAR COLLEGES SHOULD PROVIDE OPPORTUNITIES FOR COMPUTING STUDENTS TO REALIZE SYNERGIES WITH THEIR MATHEMATICS PREPARATION, PARTICIPATE IN CROSS-DISCIPLINARY LEARNING COMMUNITIES, ENGAGE IN AUTHENTIC “REAL-WORLD” LEARNING SITUATIONS AND GAIN MEANINGFUL WORK EXPERIENCES.

18 SERVING PROFESSIONAL DEVELOPMENT NEEDS OF COMPUTING FACULTY

▼ CHALLENGE ... COMPUTING FACULTY FACE DISTINCTLY DEMANDING PROFESSIONAL DEVELOPMENT CHALLENGES DUE TO THE RAPID INNOVATION OF HARDWARE AND SOFTWARE, EVER-CHANGING COURSE CONTENT LEADING TO ACCELERATED OBSOLESCENCE OF INSTRUCTIONAL MATERIALS, THE NEED TO EVALUATE NEW TECHNOLOGIES, REQUIREMENTS TO KEEP PACE WITH INDUSTRY DEMANDS AND LIMITED OPPORTUNITIES FOR PEER NETWORKING.

▲ OPPORTUNITY ... EDUCATIONAL INSTITUTIONS SHOULD PROVIDE MULTI-FACETED PROFESSIONAL DEVELOPMENT PROGRAMS FOR COMPUTING FACULTY THAT TAKE ADVANTAGE OF INTRA- AND INTER-INSTITUTIONAL COLLABORATIONS, PARTNERSHIPS WITH BUSINESS AND INDUSTRY, AND RESOURCES AVAILABLE FROM GOVERNMENTAL, PROFESSIONAL AND CERTIFYING ORGANIZATIONS.

19 ATTRACTING AND SUSTAINING COMPUTING FACULTY

▼ CHALLENGE ... TWO-YEAR COLLEGE COMPUTING FACULTY ARE STRAINED BEYOND THE PROFESSIONAL EXPECTATIONS OF COLLEAGUES IN OTHER DISCIPLINES BECAUSE COMPUTING FACULTY TEACH A DISPROPORTIONATE NUMBER OF UNIQUE PREPARATIONS AND FIRST-TIME COURSES, SERVE CONCURRENT CURRICULAR DEMANDS FROM BOTH LOCAL INDUSTRY AND TRANSFER INSTITUTIONS, PROMOTE NEW COURSES AND PROGRAMS, AND FULFILL UNCEASING PROFESSIONAL DEVELOPMENT OBLIGATIONS.

▲ OPPORTUNITY ... IT IS BOTH CRITICAL AND TIMELY FOR SENIOR ADMINISTRATORS TO DIRECT ATTENTION TO THEIR COMPUTING FACULTY, GIVEN THE RELENTLESS DEMANDS ON THESE PROFESSIONALS AND THE LIMITED NUMBER OF NEW COMPUTING FACULTY. TWO-YEAR COLLEGES SHOULD PURSUE INITIATIVES THAT PROMOTE PROFESSIONAL RENEWAL FOR MATURE COMPUTING FACULTY, AS WELL AS INCENTIVES THAT ATTRACT, MENTOR AND RETAIN DIVERSE, TALENTED FACULTY IN COMPUTING DISCIPLINES.

20 MEETING THE UNIQUE NEEDS OF COMPUTING DEPARTMENTS

▼ CHALLENGE ... COMPUTING DEPARTMENTS AT COMMUNITY COLLEGES ARE DISTINGUISHED BY SMALL NUMBERS OF FULL-TIME FACULTY, HIGHLY SPECIALIZED CURRICULA, OVER-RELIANCE ON THE SPECIALIZED EXPERTISE OF PART-TIME FACULTY, LOW ENROLLMENTS IN ADVANCED COURSES, AND CONTINUOUS PROGRAM AND COURSE REVISION.

▲ OPPORTUNITY ... SENIOR ADMINISTRATORS AT TWO-YEAR COLLEGES MUST FIND WAYS TO PROVIDE COMPUTING DEPARTMENTS WITH SUPPORT TO ENSURE THAT STUDENTS ENGAGE IN UP-TO-DATE CURRICULA RESPONSIVE TO INDUSTRY NEEDS, THAT KNOWLEDGEABLE AND QUALIFIED FACULTY TEACH STUDENTS, AND THAT STUDENTS CAN FULFILL PROGRAM REQUIREMENTS IN A TIMELY FASHION.

STRATEGIC PLANNING INITIATIVE

FINDING #: _____ TIMEFRAME: _____

INITIATIVE: _____

KEY PERSONNEL: _____

REQ'D RESOURCES: _____

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