Project Summary

The Edmonds Community College natural Science and Mathematics Division respectfully requests $1,000,000 to achieve the following goal:

Increase the number of STEM majors graduating with associate degrees and/or transferring to baccalaureate institutions through personal recruitment at area high schools, transformed curriculum across the natural sciences and mathematics division, rigorous assessment of student learning and success and the construction of a suite of student services that reduce time to degree, assure high academic achievement and ready students to thrive in their chosen STEM careers.

The *Relationships in Science Education (RISE)* project will attain five main objectives which are quantified in the project narrative; 1) Increase the number of STEM students graduating with associate degrees, 2) Increase the number of STEM students transferring to baccalaureate institutions, 3) Increase the diversity (women and underrepresented minority) of STEM majors, graduates and transfers, 4) Increase the percentage of STEM majors progressing successfully through gatekeeper STEM sequences and 5) Decrease the mean time to associate degrees attainment.

Intellectual Merit
The RISE project will be transformative for EdCC in that the faculty in every STEM department have committed to revising their curriculum to increase active learning and engagement as well as assist with the implementation of RISE student support services. The RISE project has chosen its student services components based on successful practices documented by EdCC's 2009 CCSSE, Achieving the Dream colleges and Prince George's Community College successful STEP. Existent student services will be enhanced, integrated and institutionalized to create a Core of services specifically in support of STEM majors. A second tier of more expensive services called "STEP It Up!" will be phased in and tested over the first two years to determine the level of their impact to student success and provide justification for sustaining them after the award period. RISE will evaluate its program through a rigorous research design for measuring the effectiveness of the curricular revision and student support services. The college has committed to sustaining RISE curriculum and services that are shown to be effective. In addition to the use of cognitive assessments, RISE will work with Purdue University to adapt their work in non-cognitive assessments which have been found to be particularly helpful in adapting curriculum and services to support women and underrepresented students in STEM programs.

Broader Impact
The RISE project is collaborating externally with the Edmonds School District, all five area high schools and the Equity Alliance for Achievement parent advisory committee to improve academic preparation for STEM interested students, to recruit women and underrepresented minority students as STEM majors and to increase STEM career awareness for students and their families. Internally RISE will work collaboratively with our new Mathematics, Science and Engineering Achievement (MESA) program to recruit and retain underrepresented students in STEM majors. Workshops in mentoring and retaining underrepresented students in STEM will be provided to the faculty. RISE will host a Best Practices in STEM summit to provide professional development for faculty at EdCC and across Washington State. Dissemination of the experimentally validated successes and lessons learned will be of great service to other community colleges who want to know what best practices from education literature might have the most impact for their STEM majors. The RISE project's emphasis on relationships with our students, our area high schools, universities and community will provide a strong system to sustain the increased pipeline of STEM majors well after the award period.

 "Teachers believed that students had the right to fail and we were only there to provide an opportunity to learn. Now we accept responsibility for whether or not our students are learning."
George Boggs – CEO of the American Association of Community Colleges

I. INTRODUCTION

The Relationships in Science Education (RISE) proposal to the National Science Foundation's STEM Talent Expansion Program was developed by a Core Team of ten faculty representing every STEM transfer discipline who met monthly over the past year. At these meetings faculty reviewed data on student success, shared literature on best practices in STEM curriculum and recruiting, retaining, and transferring students, reviewed a survey of our students and determined the proposal elements that would best serve our students and be sustainable after the award period. The proposal before you is the culmination of this time and energy. This process brought us closer together, enlightened us on the issues facing our students, schooled us in best practices used across the nation and strengthened our resolve to collectively transform the culture of our division and institution in service of our students' success.

The Edmonds Community College's Natural Science and Mathematics Division respectfully requests $1,000,000 to achieve the following goal: *Increase the number of STEM majors graduating with associate degrees and/or transferring to baccalaureate institutions through personal recruitment at area high schools, transformed curriculum across the natural sciences and mathematics division, rigorous assessment of student learning and success and the construction of a suite of student services that reduce time to degree, assure high academic achievement and ready students to thrive in their chosen STEM careers.*

The RISE project will attain five main objectives which are quantified later:
1. Increase the number of STEM students graduating with associate degrees,
2. Increase the number of STEM students transferring to baccalaureate institutions,
3. Increase the diversity (women and underrepresented minorities) of STEM majors, graduates and transfers,
4. Increase the percentage of STEM majors progressing through gateway STEM courses, and
5. Decrease the mean time to associate degree attainment.

In order to achieve these objectives RISE will support five primary activities:
1. Outreach and recruitment to local high school students and their families with an emphasis on recruiting women and underrepresented minority students.
2. An intake program which identifies students interested in majoring in STEM degrees before or as soon as they enter the college and provides them with cohort experiences, math and science preparation, orientation and advising upon entry into the college.
3. Curricular redesign across all STEM disciplines based upon research in increasing student engagement and success.
4. An integrated suite of student support services that include best practices in increasing retention, persistence and success for all students: faculty mentors, cohort STEMinars, study rooms with peer tutors, Fill-in-the-Gap courses, intensive early alert, a science summer start workshop, professional development activities and a transfer on-ramp for students transferring to local colleges and universities.
5. A rigorous evaluation and assessment that measures the success of the project validating institutionalization and broad dissemination while helping faculty and students reflect and improve on their teaching and learning.

About Edmonds Community College: Edmonds Community College (EdCC) is located in Snohomish County, Washington, 15 miles north of the King County/Seattle metropolitan area. The County has experienced a dramatic increase in ethnic diversity and ranks in the very top percentage nation-wide of non-white population growth. In the past decade, the number of persons of color living in Snohomish County grew from 37,586 to 100,826, an increase of 168.3%. However, less than five percent of the STEM postsecondary degrees awarded in Washington are earned by students of color. Washington State ranks fourth in the country in technology-based corporations, but 46th in participation in science and engineering graduate programs. Research shows that the current STEM degree production will meet only 63% of the expected annual job openings through 2014. Though over half of the job growth is forecasted to be in occupations that require post-secondary education or higher, 76% of the population has less than a four-year degree and 38% of adults lack any education beyond high school. Low-income and minority students are least represented in STEM fields.

EdCC is a public-supported institution accredited by the NW Commission on Colleges and Universities. Since 1967, EdCC has served over a million students. In 2009/10, the college served 21,780 students (9,298 FTEs); 35% of whom depended on financial assistance; 70% were day students; 58% were women; 35% were racial and ethnic minorities; and, 10% were students with disabilities. EdCC's exceptional faculty and staff are continuously seeking ways to best meet EdCC's mission to *"provide quality opportunities for learning and service, responding to the dynamic needs of our diverse community".* A key strategic direction approved by the College's Board of Trustees is to "serve the community as a hub of math, science and engineering" and our staff, faculty, and administration are committed to preparing students to enter and succeed in STEM fields. The College offers numerous opportunities and supports for STEM students through academic programs, clubs and associations, and special grant-funded programs. The College has received 12 NSF-funded grants during the past 12 years and manages the NSF-funded National Center for Materials Education and Technology (MatEd) and the Washington Aerospace Training and Research Center. EdCC was recently selected to establish a Mathematics Engineering Science Achievement (MESA) Student Center designed to provide academic and support services to financially and educationally disadvantaged students majoring in STEM fields.

EdCC STEM Programs & Degrees: Calculus-based STEM transfer programs offered in EdCC's Natural Science and Mathematics (NS&M) Division are: Biology; Chemistry; Environmental Science; Geology; Earth Sciences; Physics; Computer Science; General Engineering; Atmospheric Sciences, Bioengineering; Chemical Pre-Engineering; Computer and Electrical Pre-Engineering**;** Mechanical, Civil, Aeronautical, Industrial, Materials Science Pre-Engineering. Non calculus-based STEM associate degree programs include: Computer Information Systems: Database Information Technology, Information Security and Digital Forensics, Web Application Developer; Computer, Electronics, and Networks: Network Technology and Robotics and Electronics Technology, Construction Management, Materials Science Technology and Energy Management.

EdCC offers an Associate of Science degree (Track 1 or 2) designed to prepare science majors for transfer to a four-year college with junior standing. The college offers an Associate of Arts degree in Biology and General Science Teaching. The college offers 8 STEM Associate of Technical Arts degrees including the first in the State in Robotics and Electronics Technology, Digital Forensics and an Associate of Applied Science Transfer degree in Materials Science Technology. The public community colleges and the four-year colleges and universities of the State of Washington have established direct transfer agreements. Transfer agreements have been established with over 20 private and public baccalaureate institutions.

Results of Prior NSF Support for STEM Majors:
EdCC was highly effective at recruiting women and underrepresented minority students for its 2NSF DUE CSEMS awards 1) #0093990 (2001-2003) and 2) #0220684 (2003-2008). The projects supported scholars with scholarships and two main interventions: 2-credit weekly cohort classes (Career, College and Life

Success, Bridge to College, Math Projects and Job Development) and faculty advising/ mentoring. Exit evaluations of the scholars identified the cohort classes as being academically helpful as well as creating a learning community where they felt supported. The CSEMS projects had an 76% success rate of supporting students to graduation and transfer. The first project served 21 scholars, 10 were non-native speakers, 11 were persons of color, 8 were women and 4 were persons with disabilities.   The second project served 76 scholars, 20 were persons of color, 26 were women, and 6 were disabled. The RISE Core Team applied for an S-STEM grant in August entitled *Edmonds Community College STEM $cholarships, EdSTEM$,* which utilizes advising and cohort classes and many of the low cost Core services outlined in this proposal. If awarded, this grant would greatly enhance the RISE project by providing scholarships for low-income STEM students.

In 2004, the College received NSF DUE ATE #0402238 called *Sprite,* a partnership with the Edmonds School District and the University of Washington designed to strengthen math and physics skills of high school girls to better prepare them for college by teaching them to create computer animations; curriculum was disseminated to college and high school faculty at summer institutes. Project evaluation demonstrated that the girls were positively influenced about the role of math and science in their future. Teacher participants who had little or no programming experience all planned on implementing animation into their curriculum the following year. Two summer camps (50 high school students) and two summer institutes (50 teachers) were held.

STEM Students, Degrees and Transfers at Edmonds Community College: The RISE Core Team began by conducting an in-depth analysis of student data to understand our students. All data presented in this proposal represents US citizens and permanent residents unless otherwise noted. The first difficulty the team encountered was the lack of connection we had with our prospective STEM students at the beginning their academic careers. As with most community colleges, students do not declare a major, only an "intent to transfer", so unless a student enrolls in a Career and Technical Education (CTE) program, the faculty do not meet their majors until they had passed the pre-requisite gateway courses especially developmental math. Over 70% of students entering EdCC begin in developmental math and yet our data tells us that developmental math rarely leads to college level math courses. The RISE Core Team is attacking both of these problems with the institution of a STEM student tracking system and by piloting an Emporium model to redesign our developmental math program both beginning winter, 2011.

Consequently the team chose to define our STEM students by courses that they had taken. STEM students in transfer programs were defined by having taken Calculus I and two courses in a majors' sequence. For students in our CTE associate degree programs faculty designated a math, English and 2 core courses in a subject area to determine their STEM students.   Table 1 shows the student characteristics of our college and our STEM majors. The salient facts from the table demonstrate the disappointing trends that are seen across the nation. The percentage of students moving through the STEM pipeline is only 13% of those who intend to transfer. While the percentage of women enrolled at the college is 57%, the percentage who are STEM majors is only 38%. While it is encouraging to see that our underrepresented minority (URM) STEM majors and percentages are increasing (from 12%-14% last year), the overall college of enrollment of URM students is 24%. It was from these data that the RISE Core Team realized that the college needs to focus on increasing diversity in STEM.

Table 1: Student Characteristics

Student Characteristic	All Students		STEM Students*	
	2008-2009	2009-2010	2008-2009	2009-2010
Total	20,883	21,780	1176	1134
Academic Transfer Students*	5905	6244	878	816
Female	10,166 (57%)	10,721 (56%)	462 (39%)	427 (38%)
Male	7,613 (43%)	8,333 (44%)	714 (61%)	707 (62%)

Ethnicity*	African American	983 (7%)	1,115 (7%)	56 (5%)	67 (7%)
	American Indian	397 (3%)	387 (2%)	18 (2%)	19 (2%)
	Hispanic	2,075 (14%)	2,022 (13%)	47 (4%)	52 (5%)
	Pacific Islander	122 (1%)	108 (1%)	6 (1%)	6 (1%)
	URM	3,577 (24%)	3,632 (23%)	127 (12%)	144 (14%)
	Asian	2,787 (19%)	2,770 (18%)	241 (23%)	231 (23%)
	Caucasian	8,524 (57%)	9,170 (59%)	689 (65%)	641 (63%)
FTEs for 2009-2010 = 9,298 * US Citizens & Permanent Residents. Unreported gender and ethnicity not included. Percentages based on totals reported.					

This summer, 2010, EdCC was awarded a grant from the Washington Community College MESA program at the University of Washington (NSF DUE STEP Type 2: #0856830) , to begin a Mathematics, Science and Engineering Achievement (MESA) program. MESA will serve sixty calculus-based STEM majors each year who are low-income and educationally disadvantaged. The RISE Core Team will act as faculty mentors and advisors for the MESA students and are helping to staff the MESA center. Our MESA director, Rashanah Botley, (a position to be sustained by the College), is an alumna of EdCC and is actively recruiting students to the program. RISE and MESA will work collaboratively on recruitment efforts, revision of curriculum to focus on active engagement, faculty development in support of diverse students, and creation of complimentary student support services.

Table 2 shows that the small proportions of STEM students in the pipeline is reflected in the numbers receiving degrees (13%) and transferring (17%) as compared to the total numbers for the college. When disaggregated for gender and ethnicity, the percentages drop for women and URM students to 8% of degrees awarded.

Table 2: Number of Degrees & Transfers

Type of Degree (students receiving at least 1 degree)	General		STEM	
	08-09	09-10	08-09	09-10
All Associates Degrees	770	869	146	125
Associate of Arts Degrees	553	564	85	43
Associate of Science Degrees	30	43	30	43
Associate of Technical Arts	181	246	25	32
Associate of Applied Science Transfer	7	16	5	6
Students Transferring to Baccalaureate Institutions*,+	1,476	1,666	268	287
*0809 transfer students enrolled in fall, 2006 who transferred by summer, 2009 and 0910 transfer students enrolled fall, 2007 and transferred summer, 2010. + As WA universities do not require Associate's Degree for transfer, half of students transfers successfully enter as juniors without receiving a degree.				

Progression in Gateway STEM Classes: The RISE Data team worked over the year to mine our student data to understand where our students begin in the STEM pipeline and where the pipeline restricts their progression. Our research found that no courses in CTE programs were of concern except that students who took intermediate algebra along with the CTE math preparation courses tended to have a much higher probability of finishing their program. This is where the CIS and CEN programs will focus. Our analysis revealed that the gateway courses were in the transfer STEM curriculum: Pre-Calculus 1 & 2, Calculus 1, Chemistry Preparation, Chemistry 1& Chemistry 2. Table 3 shows the drastic drop in all students moving through our two gateway sequences with large losses of URM students who are not well represented to begin with. For the pre-calculus sequence it is important to note that many students take pre-calculus as a college level math requirement so much of the drop in progression is due to lack of requirement. Additionally women perform as well as men throughout the sequence yet drop off at a higher rate. Data also show that nearly 60% of students who pass these math courses with a 2.0-2.9 will not pass the following course.

Table 3: From Pre-Calc 1 to Pre-Calc 2 to Calc 1 & from Prep-Chem to Chem 1 to Chem 2

Pre-Calculus 1 (0607)			Pre-Calculus 2 (0607-0809)			Calculus 1 (0607-0809)		
Total	Women	URM	Total	Women	URM	Total	Women	URM
583	266	69	251	93	23	136	41	10
Prep-Chemistry (0607)			Chemistry 1 (0607-0809)			Chemistry 2 (0607-0809)		
Total	Women	URM	Total	Women	URM	Total	Women	URM
112	59	18	40	21	7	22	11	4

Table 4 describes the median and mean time to degree for the various STEM degrees (09-10 data were not available). No significant changes were noted in data mined during the previous 6 years. Due to the small numbers of students receiving degrees variations in times can be large. For the most part a 2.8 year median time fits for the number of students entering who need developmental math. The RISE project will focus on reducing the mean time to degree to align more closely to the median by assisting students with required advising, faculty mentoring and academic interventions when their grades fall below 3.0.

Table 4: Time to STEM Degrees (in years)

Type of Degree	2007-2008		2008-2009	
	Median	Mean	Median	Mean
All STEM Associate's Degrees	2.7	4.0	2.7	3.8
Associate of Arts Degrees	2.6	4.1	2.8	3.3
Associate of Science Degrees	2.8	2.8	3.8	4.5
Associate of Technical Arts	2.6	5.6	2.8	4.1
Associate of Applied Science Transfer	2.8	2.8	1.7	1.7

II. OBJECTIVES
The targeted objectives below were established by consideration of historical data, the percentage of women and URM students at the college and our desired enrollments and success rates for our students.

OBJECTIVE I. Increase the number of STEM students graduating with an associate degree:

STEM Degree	Baseline (2009-2010)	3rd Year (2013-2014)	5th Year (2015-2016)
All Associates Degrees	136	156 (+15%)	177 (+30%)

OBJECTIVE II. Increase the number of STEM students transferring to baccalaureate institutions:

	Baseline (2009-2010)	3rd Year (2013-2014)	5th Year (2015-2016)
STEM Transfers	287	315 (+10%)	344 (+20%)

OBJECTIVE III. Increase the diversity of EdCC STEM majors, graduates and transfers.

STEM Demographic		Baseline(09-10)	3rd Year(13-14)	5th Year(15-16)
STEM Majors	Women	427	460	490
	URM	144	164	184
STEM Degrees	Women	40	60	80
	URM	11	25	35
STEM Transfers	Women	100	140	180
	URM	24	40	60

OBJECTIVE IV. Increase the percentage of STEM majors progressing through gateway sequences

STEM Gatekeeper Sequences (RISE Students)		Baseline %	3rd Year(13-14)	5th Year (15-16)
Math	Pre-Calculus II to Calculus I	54%	60%	70%
Chemistry	Prep-Chem to Chemistry I	36%	50%	70%

OBJECTIVE V. Decrease the mean time to associate degree attainment.

STEM Degree	Baseline	3rd Year(13-14)	5th Year(15-16)
All Associate Degrees	3.8 years	3.4 years	3.2 years

III. PRIMARY ACTIVITIES

External Recruitment of STEM Majors at Area High Schools and in the Community

a. Connecting with Potential Underrepresented STEM Students at the HSs: During the fall, the RISE recruitment team will work with high school counselors and with the Edmonds School District Equity Alliance and Achievement parent advisory committee to identify young women and underrepresented minority high school students who are interested in pursuing STEM careers and invite them and their families to participate STEM college preparation workshops.

b. Family STEM Career and Academic Nights: In late fall, the RISE recruitment team will hold STEM academic and career events at the five local high schools for interested students and their families.

c. Advertising STEM to the Community and the College: The RISE recruitment team will work with EdCC College Relations to place ads in local newspapers, in the online schedule and catalog advertising the RISE project and its open events

d. STEM Saturday at EdCC: In winter, high school students and their families as well as the community will be invited to a Saturday orientation workshop to STEM careers and STEM academic pathways where they attend workshops from STEM professionals on academic STEM pathways, and on applying for college and financial aid.

e. STEM Events for the Community: STEM community events will be hosted at the college with EdCC STEM students participating in service leadership roles including Haunted Science Lab for Halloween, Science or Math Olympiad, and College Math Night for community families.

Internal Recruitment of STEM majors

a. Marketing Materials: The RISE Core Team will work with the marketing department to produce brochures and posters to be placed in campus kiosks and posted in STEM classrooms.

b. Electronic Marketing: The RISE project will be advertised in the online schedule and catalog and on the EdCC website and on the electronic bulletin boards across campus.

c. Faculty recruitment and referrals: NS&M faculty will recruit for RISE within their classes and refer students personally to the program.

Setting the Foundation – Selecting RISE Students

a. Rise Application Process: In winter 2011, the College will use registration and admission forms to identify STEM interested students who will be referred to the RISE project director. A flyer and personal letter of introduction will be mailed to each potential participant along with contact information for the project director and discipline specific faculty who will answer any questions. Prospective RISE students will fill out an application, which includes a personal statement and faculty or community member referral. Students will access applications at the NS&M division office and on the RISE website.

b. Rise Contract: Each potential RISE student will receive a contract with the application materials. It will verify the validity of all information contained within the application, as well as a statement of their intention to fully participate in all required RISE activities and services until they have graduated or transferred. Additionally students will agree to be research subjects and participate in requested evaluations assessments and tracking required by NSF. (EdCC has started the Internal Review Board (IRB) process for human subjects in preparation for the grant.)

c. RISE Student Selection: Rise students will need to have a 2.5 GPA or higher, be enrolled full-time, and be a US citizen or permanent resident. A selection committee comprised of RISE Core Team members will select students based upon their commitment to graduating in a STEM major and any extra challenges, special circumstances or educational obstacles they have had to overcome and the quality of their personal statement and referral. **Annual targets for RISE students served in the five-year award are: Year 1- 75; Year 2- 160; Year 3- 200; Year 4- 220; Year 5 - 230.**

Curriculum Revision by the Entire Natural Science & Mathematics Division

All 9 STEM departments (biology, chemistry, computer information systems, computer electronics and networks (robotics), computer science, engineering and material science, mathematics, environmental science and physics) at EdCC have committed to the following curricular revision activities. A Memorandum or Understanding with signatures from participating administrators and full-time faculty from every department is provided in the supplemental documents section. During the initial meetings to design the RISE project, it was discovered that each department was already researching and preparing to pilot research-based curriculum in support of improving student success. For example, the chemists were already piloting POGIL (Process Oriented Guided Inquiry Learning) in organic chemistry. The physicists were researching SCALE-UP (Student Centered Active Learning Environment for Undergraduate Programs) and preparing to transform their classrooms to integrate lab and lecture into an activity based format. As a result of our data analysis, the math department has already committed to redesigning the developmental math curriculum to implement the Emporium Model developed at the National Center for Academic Transformation for teaching all sections of developmental math beginning in Winter 2011. This momentum will drive the redesign of curriculum across the division, described below.

a. Pilot of Curriculum Revision: Every STEM department will pilot research-based curriculum revisions that increase student engagement in the <u>first two years</u>. Each department (9) will receive funding, if needed, to run pilot sections of their new curriculum.

b. Research Design & Assessment: Curricular revisions will follow an intentional research design and assessment resulting in evidence of impact to students' cognitive and non-cognitive growth.

c. Statewide STEM Engagement and Assessment Summit: Due to our state's budget crisis, personnel in the State's 34-community college system are not permitted to travel out of state using state funds. Therefore, in order to provide access to current experts in STEM education research, the RISE project will host a STEM Summit where national and state experts will present on the latest best practices. The Summit will be held in Year 1, open to all community colleges in the State. Four national experts in curricula and assessment in support of STEM students will be invited to speak. A call for presentations will go out STEM faculty statewide for their work in increasing student engagement and assessing results.

d. RISE Curriculum Summer Institute for EdCC Faculty: After the first two pilot years for the RISE project full and part-time faculty department teams will attend a 3-day summer institute to work on institutionalizing and scaling up best practices. This will be a working institute where the college will pay for part of the travel and subsistence.

e. Part-Time Instructor Apprenticeship Program: This apprenticeship program is key to implementing our revised curriculum as well as improving classroom success and student retention (Lyons and Kysilka, 2000). Part-time instructors teach over 40% of classes in the NS&M division. Part-time instructors will be paid to attend a 6-hour training workshop on the curricular revisions in their departments as well as to shadow a full-time instructor for two weeks. They will be paid to perform all laboratories before teaching them. They will be paid a stipend and supported for all travel costs to attend the RISE Curriculum Summer institute. The RISE project director will compile a NS&M division online part-time faculty handbook to be used as a reference. The apprenticeship program will be sustained by the college after the award period.

Suite of Student Support Services: CORE and STEP It Up!

In Year 1, RISE will enhance and institutionalize several student support services currently provided by the college. These *Core Services* are relatively inexpensive and designed to be sustained beyond the term of the award. The suite of integrated *Core Services* is based on a) the expertise of our STEP consultant, Christine Barrow from Prince George's Community College; b) referenced best practices most significantly the experience from Washington State Achieving the Dream colleges (Jenkins, 2009); and c) a regression tree analysis that recursively partitioned the data of our 2009 CCSSE (Community College Survey of Student

Engagement) results. In the CCSSE analysis students who rated their "entire educational experience" as "excellent" also rated the following as "excellent" (in order of importance): a) the provision of knowledge, skills and personal development in developing clearer career goals; b) relationships with instructors; c) providing support to succeed; d) having supportive friends; e) gaining information about career opportunities; and, f) satisfaction with academic advising and planning.

RISE will also create and test expanded versions (*STEP It Up!*) of the *Core Services* that are research-based yet more expensive and potentially difficult to sustain unless the college knows the direct benefits to students. STEP It Up! services will be phased in during the first 2 years of the project in order to follow research design and assessment protocols. These services with the rationale are described below.

Table 5: Core and STEP it Up! Services

	CORE Services	**STEP It Up! Services**
1	STEM Orientation	Science Summer Start
2	Faculty Advising	Faculty Advising & Mentoring
3	STEM Career Night	STEM Career STEMinar
4	Early Alert	Early Diagnostic and Intensive Alert
5	STEM Study Rooms	STEM Study Rooms staffed by Peer Tutors
6	Supplemental Instruction	Fill-in-the-Gap Over the Break
7	STEM faculty & student mixers	STEMinar classes
8	Professional Development STEMinars	Citizen Scholar Certificate, UGR project, Honors program
9	Transfer Workshops	Transfer On-Ramp

 a. Orientation: The college offers on-ground and online orientation for new students (not required). **Core service:** A required Saturday orientation will be designed to address the needs of STEM students. At the orientation students will meet their faculty advisor/mentor, create a long-term academic plan, tour the college and the science labs, complete baseline math and science assessments, and learn about financial aid and other services provided by the college. **STEP It Up!:** To enhance the preparedness of New-to-College RISE students and create a cohort, students will be invited to attend a credit-bearing Science Summer Start workshop. The workshop (2 weeks, 4 hours per day before the start of the fall quarter) will include the orientation activities above, offer science and math instruction and engage in a service learning or research activity. **Rationale:** Providing discipline specific orientations and summer start programs are used widely in first year student support programs especially for preparing students for math courses. Achieving the Dream community colleges in Washington and Pennsylvania had success with early and required orientations to improve retention. (Jenkins, et.al., 2009, Hagedorn & DuBray, 2010, Weissman, 2010, Lester, 2010, Pantic, 2007)

b. Faculty Advising and Mentoring: Though full time faculty are required by contract to advise students for 30 hours/year, many students do not take advantage of this opportunity**. Core service:** RISE students will be assigned a discipline specific adviser and be required to meet for advising during registration. STEM faculty have agreed to take on a formal STEM student advising load for their discipline. **STEP It Up!:** Each advisor will also serve as a mentor to RISE students. Faculty will receive training on best practices in mentoring students, in particular underrepresented minority and women students, and a faculty mentoring handbook will be created. New-to-College RISE students will meet with mentors on the first day of the quarter, at the end of the first week, at mid-quarter for advising, and at the end of the quarter. Faculty mentors will also participate in the intensive Early Alert program. Freshmen and Sophomore RISE students in good academic standing will meet twice a quarter with their mentor. Students on academic probation will be required to meet more frequently. **Rationale:** From our 2009 CCSSE results our students ranked academic advising and quality faculty relationships as the first and second major factors in contributing to a high quality educational experience at EdCC. Faculty mentoring has been found to increase retention and student success especially for underrepresented minority students (Jenkins, et. al., 2009, Pope, 2002)

c. Career Exploration & Advising: The College supports a Career Counseling Center which offers career exploration and advising for all students. **<u>Core services</u>**: A STEM Career Night will be provided for current and potential students involving representatives from local industries. **<u>STEP It Up:</u>** A Career STEMinar will be developed, that will include industry speakers and STEM career advising. The RISE Core Team will work with the Career Action Center to research local careers served by their disciplines. The RISE project director will work with County Workforce Development Councils to catalog the forecasted STEM occupation trends for the region and will compile and maintain an online handbook detailing local STEM careers and the majors that prepare students for those careers. Each quarter, RISE students will have the opportunity to attend industry field trips**. <u>Rationale:</u>** As documented earlier our students demonstrated the importance of developing career goals in the 2009 CSSEE analysis. Early exposure to STEM careers can be particularly important for women and minority students (Hagedorn & DuBray, 2010, Pantic, 2007) and having a clear career and academic goal increases transfer rates (Prince, 2010). Initiatives for strengthening STEM include the addition of career forums, involvement of regional employers and readily available information about STEM careers (Scruggs, 2008).

d. Early Alert: EdCC's Early Alert System was implemented three years ago and is an accepted practice among faculty. In the Spring 2010, 873 students were reported by 141 instructors. **<u>Core service:</u>** All STEM faculty will participate in the college's Early Alert and the Project Director will have access to the system and will alert the faculty advisor/mentors if necessary. **<u>STEP It Up!:</u>** As part of the RISE project, an intensive early alert program will be instituted. This three part program consists of a) STEM faculty giving a online prerequisite diagnostic on the first day of a gatekeeper STEM course; b) giving an online quiz at the end of week one; and, c) New-to-College students or RISE students on probation (GPA or STEM grades below 2.5) handing in a daily class attendance sheet to the Project Director during the first week of the quarter. If a student does not pass the pre-requisite diagnostic or the first week quiz or have perfect attendance, the project director will inform the student's mentor who will contact the student and work with them on a plan to solve the problems. **<u>Rationale:</u>** The RISE model is based upon other effective early alert processes that are known to improve student retention, especially for underrepresented STEM students (Hagedorn & DuBray, 2010, Jenkins, et. al., 2009, Washburn, 2004).

e. STEM Study Rooms: EdCC provides 5 open STEM study rooms on campus: the new MESA Center, Physics and Chemistry, Computer Information Systems, Biology, and Engineering; they are open during normal class hours. These rooms are all furnished with tables, whiteboards, and networked computers. **<u>Core service:</u>** Card readers will be installed to monitor RISE student use. **<u>STEP It Up!:</u>** Peer tutors will be trained by the college. RISE faculty will serve 1-2 office hours/week. The rooms will be designed as supportive environments that foster a community of learners. **<u>Rationale:</u>** Staffed study rooms have been found to create an effective learning community for students and are often utilized more frequently by women and underrepresented students (Weissman et. al, 2009). Yet most models do not require student participation so data are confounded with student self -selection. By monitoring the rooms and testing the difference between voluntary and required attendance and frequency, RISE will contribute to the body of knowledge on the effectiveness of study centers.

f. Supplemental Instruction (SI): SI is currently offered in some pre-college courses with high failure rates and first-year college science and math courses. Facilitated by faculty instructors and assisted by RISE student/peers, students attend SI sessions outside of class and have the opportunity to learn collaboratively. **<u>Core service:</u>** SI will be offered in the gateway STEM classes & Fill-in-the Gap courses. SI for gateway classes will be paid for by the college. **<u>STEP It Up!:</u>** RISE students who earn a grade under a 3.0 in gateway math or chemistry class will be required to enroll in 1-credit online Fill-in-the-Gap (FIG) courses between quarters. Students who pass the gateway courses with a grade between 2.0-2.9 will be able to "fill in the gaps" to prepare them for the next course in the sequence. Those who earn below a 2.0 in the gateway class will be better prepared to pass the class when they retake it. Freshman and sophomore RISE students in good academic standing (GPA of 3.0 or higher) will serve as SI instructors for FIGs. **<u>Rationale:</u>** SI allows

students to master course content while developing and integrating learning and study strategies. SI sessions are interactive and collaborative. Students participating in SI in high-failure courses a) earn higher mean final course grades than students who do not participate and b) persist at higher rates than students who do not participate in SI. Despite ethnicity and prior academic achievement, students participating in SI succeed at a higher rate. (National Center for Supplemental Instruction, 1997, Jenkins, et. al., 2010)

g. Cohort Mixers & STEMinars: EdCC offers an array of activities for students to network and build relationships including Brown Bag Lecture Series, student leadership, service learning, clubs, sports teams and events. **Core services**: As a way to strengthen and maintain relationships among STEM students, the RISE project will host quarterly mixers with students and faculty featuring local STEM industry speakers, former graduates, and local scientists. **STEP it up!:** As learning communities, RISE students will enroll in one 1-credit STEMinars each year. STEMinars are one-credit classes centered around a particular STEM topic designed to enhance student learning and success. RISE students will be clustered into STEMinars by the project director and New-to-College RISE students will be required to enroll in a STEMinar their first quarter. **Rationale:** The purpose of mixers and STEMinars is to provide a learning community, relevant information, leadership activities, and opportunities for social networking that result in a stronger investment in the students' academic career and greater sense of efficacy (Beaulieu, 2006, Brock, 2010, Jenkins et. al., 2009). STEMinars will involve students in issues and questions that matter beyond the classroom and integrate their personal and academic lives (Kuh, 2008).

Table 6: STEMinar Courses (* New course to be developed by RISE Core Team)

Academic Level	STEMinar courses
New-to-College	STEM Study Skills and Time Management (Bridge 100), STEM Careers (C-STEM 100)*, Introduction to Engineering (ENGR 100), Careers in Computer Information Systems (CIS Careers 100)*
Freshman (a minimum of 15 college credits plus one STEM major course)	STEMinars listed above plus Service Learning (SL RISE100)*, Intro to Research (UGR100)*, Technical Communications (COMM 120)*
Sophomore(one year of coursework left before transfer and/or graduation)	Resume Writing and Interviews (JOBDEV 130), Service Learning (SL RISE100)*, Introduction to Research (UGR100)*, Research projects (UGR 102)*, Technical Communications (COMM 120)

h. Professional Development Through Service Learning and Undergraduate Research:

Service Learning: EdCC currently offers one of largest service learning programs in community colleges, nationwide. These programs connect students to community-based projects such as restoration horticulture in our parks, tutoring in K-12 public schools, student retention initiatives with the TRIO Student Support Services program and Native American education programs. Through a Learn and Serve grant from Washington Campus Compact, four STEM faculty members serve as fellows to create and incorporate community-based learning projects in their classrooms. This team will increase service learning opportunities in STEM disciplines, create sustainability access teams, sponsor projects, plan community events and train and mentor other STEM faculty.

Undergraduate Research: As is true with many community colleges undergraduate research has been limited to only a few innovative faculty. Recognizing the need for students to have access to the invaluable experiences EdCC is institutionalizing our undergraduate research program this year. The EdCC UGR program serves all students in the Arts and Sciences as well as our Career and Technical Education STEM programs. The college is fortunate to have developed a working relationship with the University of Washington's Undergraduate Research Program (UW URP) to assist us in crafting a low cost program (Snow et. al., 2010). EdCC students will be able to benefit from workshops, research advising and presentation opportunities described in detail below. Co-PIs Tom Fleming and Tracey Miller are attending the AACU's *Creativity, Inquiry, and Discovery: Undergraduate Research In and Across the Disciplines* conference this November. In April, 2011 EdCC will host the Council for Undergraduate Research's

campus workshop for community college's - *Developing Undergraduate Research at Community Colleges: Tapping the Potential of All Students.* A team of faculty from across the disciplines will work to create the foundation for EdCC's program by the end of this academic year.

Honors Program: EdCC began a Science Honors Program in 2009, an exclusive offering for students maintaining a 3.2 GPA or higher with strong faculty recommendations. Honor students participate in small seminar-sized team-taught classes; have access to research seminars, internships, and service learning; attend cultural and social activities; and, have priority registration and specialized advising.

Core services: New-to-College students will have a 2 hour/quarter service learning requirement with a RISE related community or campus activity. Freshman and sophomore RISE students will take Service Learning (SL RISE100) or Introduction to Research (UGR100) or Technical Communications (COMM 120) or a Science Honors Seminar. UW URP will present an annual workshop at EdCC on undergraduate research. In addition, UW URP will invite RISE students to attend any of the URP workshops offered on the UW campus that teach the ins and outs of UGR at the UW. RISE students who are preparing to transfer to the UW will take advantage of one-on-one advising, offered by URP staff. **STEP It Up!:** Faculty research mentors will go through a training based upon best practices (Maybrouk & Peters, 2000, Shelito et. al., 2001). RISE students will choose to perform undergraduate research OR work to obtain a Citizens Scholar Certificate in Service Learning OR join the Honors Program. At the end of the year, the college will host a RISE Symposium where students will present their work and receive recognition. The RISE Symposium will be judged by university faculty, regional STEM employers and other community members. The UW URP will invite RISE students doing research to participate in the annual UW Undergraduate Research Symposium held in May of each year. **Rationale:** STEM service learning projects develop leadership, engage students in their community, and increase knowledge and interest in STEM by providing students with direct experiences that they are studying in the curriculum (Lemus et. al., 2010, Kuh, 2008, Beaulieu, 2006). As well as being a motivator for faculty development, undergraduate research increases student success, engagement and motivation by promoting contact with faculty and other students, teaching critical thinking skills that extend beyond academia and can increase the numbers of minority students majoring in STEM (Boggs, 2009).

i. Transition to University: The College maintains a transfer website with course equivalencies to all Washington State public and private colleges and universities and the library has an extensive collection of four-year college and university catalogs, directories, videos, financial aid sources, and other information. **Core services:** The Project Director will work with transfer advisers at University of Washington, Seattle & Bothell campuses, and Central Washington University to provide current information to faculty and students on the EdCC transfer website. RISE will offer transfer workshops specifically for STEM students which will assist students with their admissions and financial aid applications and personal statements. The Project Director will conduct Transfer Student Workshops twice a year presenting information about four-year institutions, financial aid processes, and admission processes (developing student essays, application requirements, getting letters of recommendation, preparing for admission tests and all other prerequisites). **STEP it up!:** The Career STEMinar will provide an early career pathway for RISE students. EdCC alumni will be invited to relate transfer "dos and don'ts" at the STEMinar. Students will visit campuses together to attend transfer advising workshops and appointments. **Rationale:** Effective transfer practices include published transfer requirements for faculty advisers and students, using faculty advisers and peers to inform students, physically visiting campuses and tracking student progress. (Serban, 2008, Fishbach, 2006, Peterman, 2002).

Table 7.: Core & STEP it UP! Services distributed according to academic level

New-to-College	Freshman	Sophomore
• Science Summer Start • Early alert • Faculty advisor/ mentor • Quarterly mixers • Study room • Weekly STEMinar • Supplemental Instruction • Fill-in-the-Gap courses	• Faculty advisor/mentor • Quarterly mixers • Study room • Weekly STEMinar • Supplemental Instruction • Fill-in-the-Gap courses • Be a peer tutor or SI instructor • Engage in SL or UGR	• Faculty advisor/ mentor • Quarterly mixers • Study room • Weekly STEMinar • Be a peer tutor or supplemental instructor • Engage in SL or UGR

V. PROJECT MANAGEMENT AND TIMELINE

Because of the ambitious set of initiatives proposed, the RISE management structure is based off of similarly integrated and complex *Achieving the Dream* (AtD) projects.   AtD projects utilize both a Core Team and Data Team to guide and monitor the progress of project initiatives.

Table 8: RISE Core Team

Personnel/Position	Expertise	Responsibility
Sara Selfe, PI Chemistry Chair, Faculty	Ph.D. Organic Chemistry, 19 yrs teaching, Co-PI on REU & HS Chemistry NSF grants	Supervises all RISE project activities & objectives, leads the Core Team, leads chemistry curriculum redesign
Patrick Burnett, co-PI Engineering & Materials Science Chair, Faculty	M.S. Physics Teaching, 3 yrs teaching, Mat. Science Road show, Edmonds SD - HS advisory team	Director of high school & community outreach and recruitment, leads engineering & materials science curriculum redesign
Melissa Mackay, co-PI Math co-Chair, Faculty	M.S. Mathematics, 16 yrs teaching, co-director; dev. Math redesign	Leads mathematics curriculum redesign
Tracey Miller, co-PI Biology Chair, Faculty	Ph.D. Biology, 9 yrs teaching experience	Director of undergraduate research, leads biology curriculum redesign
RISE Project Director	BA in science field or education; experience in project management	Student intake, monitoring and tracking, project management, budget tracking
Chris Eaton Math Faculty	M.S. Mathematics, 15 yrs teaching	Assists with mathematics redesign
Paul Bladek Computer Sci. Chair, Faculty	M.S. Computer Graphics, 22 yrs teaching, Co-PI on CSEMS awards	Leads computer science redesign
Marti Baker CIS Faculty	A.A CIS, 12 yrs teaching	Leads CIS curriculum redesign
Kay Latimer CEN (Robotics) Chair, Faculty	A.T.A Electronics, 25 yrs teaching	Leads computer electronics & robotics curriculum redesign
Rachel Wade Physics Chair, Faculty	M.S. & Ph.C. Physics Education, 5 yrs teaching	Leads physics curriculum redesign
Rashanah Botley Director, MESA program	B.A. Individual & Family Development	Directs diversity training for faculty mentors & diversity activities
David Chalif Natural Sciences & Math Dean	M.S. & Ph.C. Mathematics, 28yrs teaching, 10 yrs administration	Responsible for all administrative issues related to project implementation

Table 9: RISE Data Team

Personnel	Expertise	Responsibility
Tom Fleming, co-PI Physics Faculty	M.S. & Ph.C in physics education & high energy physics,	Lead all data activities, analysis and writing reports
Jim Mulik, Director of Evaluation & Assessment	M.S. in statistics, VP of instruction, College of the Marshall Islands	Assist with data plans, analysis and interpretation
Patricia Huffman, Institutional Researcher	B.S. in business, 30 yrs at EdCC in registration & institutional reseach	Set up data bases, retrieving student data from state board & college data bases
Annie Laurie Armstrong, External Evaluator	Master's in Public Administration	Design, conduct, analyze and report on student & faculty focus groups & surveys

Table 10: Internal Advisory Committee (meeting quarterly)

Marty Cavaluzzi; Vice President of Instruction	Heather McKnight – Director Trio SSS Program
George Smith; Vice President of Student Services	Amy Johnson – Director of Service Learning
Rae Ellen Reas: Registrar & Director of Financial Aid	Beth Nichols – Ex.Director of Grants, Research & Institutional Effectiveness
Stephanie Baron – Director of Advising	RISE Core Team
Robin Datta – Director of Honors Program	RISE Data Team

Table 11: External Advisory Committee (virtual meetings with RISE team, semi-annually)

Ken Limon – Ast. superintendent, Edmonds School District, Chair EdCC & ESD Articulation Council	P.K. Imbrie – co-PI for ciHUB, Associate professor, Engineering Ed., Purdue University
Jane Muhich –Carnegie Foundation Mathway/Statway Director	Jennifer Harris – Assistant Director, University of Washington, Undergraduate Research Program
Christine Barrow – PI STEP Project, Dean of STEM division, Prince George's Community College	

Table 12: TIMELINE

Activity	1				2				3				4				5			
Hire Project Director	X																			
Internal Advisory Meetings	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
External Advisory Meetings	X		X		X		X		X		X		X		X		X		X	
Outreach to High Schools	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Recruit & Select RISE Students	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Faculty Mentor Training	X				X				X				X				X			
Pilot Curriculum	X	X	X	X	X	X	X	X												
State Science Summit			X																	
Summer Curriculum Institute					X															
Evaluate Curriculum	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Institutionalize Effective Curriculum									X	X	X	X	X	X	X	X	X	X	X	X
Pilot STEP-it-Up Services	X	X	X	X	X	X	X	X												
Evaluate Core & STEP-it-Up Serv.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Institutionalize Effective Services									X	X	X	X	X	X	X	X	X	X	X	X
Program Tracking & Evaluation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

VI. PROGRAM AND PROGRAM-ELEMENT RESEARCH, EVALUATION AND ASSESSMENT

The goal of the proposed comprehensive formative and summative evaluation is to provide the RISE Core Team and Advisory Committees with the information needed to make data-based decisions to improve delivery and determine whether RISE is achieving its goals and objectives. The systematic collection and delivery of evaluation findings will be used to: a) monitor progress toward goals/objectives, b) guide on-going decision making and improvement efforts, c) document project outcomes, d) judge the direct benefits of the project, and e) justify institutionalization of effective program components. During project implementation, *formative* evaluation findings will support RISE Core Team as they focus on development and delivery. Formative evaluation data will also help assess progress toward meeting the goals and objectives. At key points during the project *summative* evaluation findings will be used to inform others of findings and to make decisions about project worth and value. The evaluation plan uses mixed methods to gather information and ensure quality. The evaluation will be guided by *NSF User-Friendly Handbook for Project Evaluation*.

   a. Establish a STEM Student Data Base: Beginning in fall 2010, the NS&M Division will establish new institutional procedures for tracking student retention rates in STEM disciplines. The Division will

collect information on Entering Student Intent vs. Exiting Outcome for all students. Quantitative measures for success will include 1) Completion of Associate degrees, 2) Transfer to a Baccalaureate programs in STEM, 3) Institutional Attrition/Completion in STEM gateway classes and 4) STEM student retention to degree completion. Initial factors to be studied as potential predictors include; coursework grades, quarterly and cumulative GPA, amount of use of internal RISE project components and other college resources.

b. Attitudinal Change: All entering STEM majors will be surveyed and interviewed regarding their intent and expectations. Pre/post survey data will be studied for reliability and validity. Students will be surveyed for suggested improvements to their curriculum and support services. Dominant factors will be identified and interventions implemented.

c. Retrospective Baseline Data: The RISE Data Team will work to determine what variables among those historically collected by the institution are most correlated with historical success rates in each degree attainment (e.g., GPA, quarterly course load, financial need, un-met financial need, total time of attendance, repeat/attrition courses).

d. Quantitative Skills, Conceptual Diagnostics: RISE will conduct a large-scale implementation of Basic Skills Diagnostic Test (BSDT-Epstein) on all entering STEM students to determine their basic mathematical skills. Faculty mentors will score and analyze the results and develop interventions. STEM students will be post tested to assess the interventions. The RISE project team will work with consultant P.K. Imbrie, co-PI of the NSF funded **ciHUB** (A community for Concept Inventory developers, researchers, and users) project to conduct discipline specific concept inventories such as the Calculus Concept Inventory (CCI - Epstein) and Force Concept Inventory (FCI – Halloun & Hestenes) will also be administered pre and post to STEM students taking the appropriate courses.

e. Non-Cognitive Assessments: In addition to supporting RISE with our use of concept inventories P.K. Imbrie will assist us with beta-testing Purdue engineering department's suite of non-cognitive assessments. The combination of cognitive and non-cognitive assessments will provide the RISE Data Team with a hybrid model, which has been shown to be more effective at understanding and predicting retention and success of women and underrepresented STEM students. Purdue's affective measures are complex and include motivation, meta-cognition, deep vs. surface learning, self-efficacy, leadership, career indecision, self belief, intent to persist, expectation of social climate, self worth and self esteem. RISE will pre- and post- test students quarterly for the first two years and correlate results with student success and retention.

f. Faculty and Student Focus Groups: Our external evaluator will conduct mid-quarter and-end-of-quarter student focus groups to determine how the students perceive the effectiveness of the project strategies. Faculty will also engage in focus groups to check agreement on what they believe the students are experiencing. These focus groups will be designed to garner insights into the strengths and weaknesses of the different instructional and service delivery approaches, and be a critical feature of the continuous improvement efforts. They will also help to clarify the degree to which the impressions of constituencies converge or diverge and why. The comments of focus group members will be coded, quantified and summarized in concise briefing reports. The focus groups would act as a rolling interview, and be designed to accommodate the different features of the program, and thus would be timed to garner real time feedback. If changes are made in the program design, the feedback of different point in time focus group members will be compared to see if these service delivery changes appear to be influencing student pursuit of associate degrees, baccalaureate institutions or student pursuit of STEM majors.

g. Student Progress Monitoring: Formal scholar progress reviews will be performed by faculty mentors each time they meet with their mentee. A regular panel review by faculty mentors will be conducted to review and rate progress of all STEM majors using a (progress rubric). Quantitative assessment of inter-rater agreement on student progress will be performed and agreement measures compared with actual student progress outcomes.

h. Phased Implementation and Evaluation of STEP It Up! Student Services: "STEP It UP!" services will be phased in over the first two years, within the parameters of a research design and with commensurate evaluation/assessments.

Table 13: STEP It Up! Implementation Timeline, Research Design and Evaluation

When	STEP It UP!	Research Design	Evaluation

Fall 2011	Faculty Mentors	Freshman & Sophomore* RISE students receive a faculty mentor	-faculty mentor focus groups -student focus groups
	STEMinars	Freshman & Sophomore* RISE students enroll in 1 or 2-credit STEMinars	-matched pair comparison of RISE students to students in previous years -online survey to RISE students
Winter 2012	Fill-in-the-Gap over the break	RISE students who earn less than a 3.0 in a gateway class are required to take this online course	-pre and post diagnostics for each class -track persistence in next course - pre and post non-cognitive assessments
	Professional Development	Service Learning OR Undergraduate Research	-pre and post non-cognitive assessments -student focus groups
Spring 2012	STEM Study Rooms	-Two of the same STEM course are split: one section requires use of study room another does not - Two of the same STEM course are split: one section requires different frequency than other	-matched pair success in course -student focus groups
Fall 2012	Science Summer Start	Invite all New-to-College students	-pre and post non-cognitive assessments -matched pairs of RISE students attending and not attending -track later performance
	Intensive Early Alert	Two of the same STEM course are split: One section requires diagnostics & first week quiz – other does not	-matched pair success in course -student focus groups
Winter 2013	STEMinars	New-to-College students enroll in 1 or 2 credit STEMinars	-matched pair comparison of RISE students to students in previous years -online survey to RISE students
	Supplemental Instruction	Two of the same STEM course are split: one uses supplemental instruction the other does not	-matched pair success in course -supplemental instructor focus groups -student focus groups
Spring 2013	Peer Mentors/ Study Rooms	One room with mentors and another without.	-focus groups with peer mentors -online survey of student participants
*Because the start date for RISE will be August 1, 2011 the first cohort of RISE students will be internal EdCC students who fall into the Freshman and Sophomore categories.			

VII. DISSEMINATION
The RISE Core & Data Teams will work to broadly disseminate our findings. We will present at regional discipline meetings and the annual Washington State Community College Assessment meeting, the NSF STEP PIs meeting and the American Association of Colleges and Universities STEMTech meeting. As findings become available the Teams will work to publish in suitable journals such as the Journal of Community College Research, the AMATYC review or the CUR Quarterly. The EdCC marketing department will initiate RISE's website. The project director will maintain the website to disseminate project activities and findings.

VIII. SUSTAINABILITY
As described throughout the narrative and supported by the administration, the RISE project has been designed with the intention of sustaining all proven project components. In Years 4 and 5, the college begins to absorb many of RISE instructional and support services and infrastructure, including the project director's position. The curriculum revisions that are successful will be institutionalized along with the adjunct faculty apprenticeship program. Project activities will be sustained through expected student retention cost savings, leveraging of other projects and continuation of grant development. Most importantly the commitment to continuous improvement that begins now will be sustained into the future.