FORM NP

NEW PROGRAM PROPOSAL FORM

Sponsoring Institution:	Three Rivers Community College
Program Title:	Geographic Information Systems
Degree/Certificate:	A.A.S. in Geographic Information Systems (GIS) One-Year Certificate in GIS
CIP Code:	45.0702
Implementation Date:	Fall 2011
Cooperative Partners:	Industrial Technology Advisory Committee
Expected Date of First Graduation:	May 2013

Person to Contact for More Information: Mr. Bud Joyner, Director
Career Education and Workforce Development
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(Attached are the: Summary of Need, Duplication, Collaboration, and Program Structure.)

SUMMARY OF NEED

A. Student Demand

The need for trained employees who can use and understand geographic information systems (GIS) is expected to increase substantially in the service area of Three Rivers Community College (TRCC) in the immediate future. Discussion with the TRCC Admissions Office, student advisors, local engineering firms, and the Career Education and Workforce Development Office reveals there is a need for providing GIS training to better prepare students for future job demands. The enrollment for the first five years of both the two-year A.A.S. degree program and the one-year certificate program for full- and part-time students is estimated as follows:

A.A.S GIS Degree

Year 1	2011-2012	10
Year 2	2012-2013	19
Year 3	2013-2014	30
Year 4	2014-2015	50
Year 5	2015-2016	75

One-Year GIS Certificate

Year 1	2011-2012	12
Year 2	2012-2013	24
Year 3	2013-2014	40
Year 4	2014-2015	60
Year 5	2015-2016	80

The size and scope of the program will initially be limited due to the availability of instructional software and the availability of faculty. For enrollment projections, see FORM SE attached.

B. Market Demand

Needs analysis was conducted by evaluating how GIS is currently being used and who is using GIS in our service area. It was determined that many state agencies, local municipalities, county offices, local surveying and engineering firms, utility providers and others were using some component of GIS (i.e. end user of mapping services, collecting data, analyzing information, etc.).

TRCC faculty also conducted a Needs Assessment in the service area in late 2009 to assess the demand for employees with GIS skills and knowledge. The Needs Assessment identified a demand by local employers for workers with advanced technical skills in GIS. The demand in this degree is only expected to grow due to retirement of current technicians and the increasing use of GIS by different industries and businesses.

The Occupational Outlook Handbook published by the Bureau of Labor Statistics under the Department of Labor indicates that the job outlook for GIS skilled technicians (mapping technicians) is expected to grow by 20 percent from 2008 to 2018. The increased popularity of online mapping systems has created a higher demand for and awareness of geographic information among the public. In addition, many green industries depend on GIS applications as part of their overall planning, use and development of services.

C. Societal Needs

According to the employers contacted, one of the critical needs is providing training opportunities locally for GIS applications.

This degree also represents an affordable option for preparation for employment for residents of the service area. The tuition for a degree/certificate at Three Rivers Community College is relatively inexpensive and provides an affordable option to leaving the area to attend another institution. In addition, the program provides citizens with the technical skills to compete in today's global marketplace, to advance career opportunities, and provide a better standard of living for their families.

D. Methodology for Identification of Market and Societal Need

Market demand and societal information was obtained from a variety of sources. Specific sources include, but are not limited to the following:

- Internet research on labor statistics in January 2011:
  - ✓ Bureau for Labor Statistics
  - ✓ Department of Economic Development
  - ✓ Missouri Department of Conservation – Online Recruitment
- Consensus of Three Rivers Community College Career Education Advisory Committees (October 2010 and March 2011 committee meetings)
- Needs assessment conducted by TRCC Staff (2010)
- Literature review of trade journals

DUPLICATION AND COLLABORATION

Various programs similar to the one proposed are offered by other community colleges throughout the state; these program offerings however, are not within the TRCC service area and do not create duplication of effort. Neither private career schools nor area vocational-technical schools in the region offer programming of this nature.

This program in GIS is designed initially to be offered on the college's home campus and through the use of a mobile lab it will be available throughout our service area.

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PROGRAM STRUCTURE

The GIS program was developed using inputs from several sources. The faculty from the Business, Education, Math, Science and Technology Division was the primary sources. Additional input was received from the Three Rivers Community College Career Education Advisory Committee. Programs already in place at other colleges were reviewed as was the literature related to competencies and job responsibilities expected of graduates.

The degree and certificate programs were approved by Three Rivers Community College Curriculum Committee in the April 2011 meeting.

A. Total credits required for graduation:

A.A.S. degree	**65 Semester Hours**
One-Year Certificate	**30 Semester Hours**

B. Residency requirements: **15 Semester Hours**

At least 15 semester hours must be completed at Three Rivers Community College.

C. Courses and credits required for general education:

A.A.S Degree	**28 Semester Hours**	
ENGL 111	College Writing	3 Semester Hours
ENGL 112	Advanced College Writing	3 Semester Hours
SCOM 110	Public Speaking	3 Semester Hours
GOVT 121	National & State Government	3 Semester Hours
CIVL 106 or higher	Technical Math I	3 Semester Hours
CIVL 107 or higher	Technical Math II	3 Semester Hours
PHYS 150	Environmental Geology	4 Semester Hours
GEOG 111	Regional Geography: Eastern World	3 Semester Hours
GEOG 112	Regional Geography: Western World	3 Semester Hours

One-Year Certificate **0 Semester Hours**

D. Courses and credits required for major:

A.A. S. Degree **31 Semester Hours**

GIS 110	Introduction to Mapping Principles	3 Semester Hours
GIS 120	Introduction to Geographic Information Systems	3 Semester Hours
GIS 140	Geographic Information Systems II	3 Semester Hours
GIS 210	WEB-Based GIS	3 Semester Hours
GIS 220	Introduction to Remote Sensing	3 Semester Hours
GIS 230	Spatial Analysis in GIS	3 Semester Hours
GIS 240	Applications in GIS	3 Semester Hours
GIS 250	Advanced GIS	3 Semester Hours
IST 125	Visual BASIC Programming	3 Semester Hours
IST 269	Database Applications	3 Semester Hours
CIVL 198	Workplace Readiness	1 Semester Hour
One-Year Certificate	**30 Semester Hours**	
GIS 110	Introduction to Mapping Principles	3 Semester Hours
GIS 120	Introduction to Geographic Information Systems	3 Semester Hours
GIS 140	Geographic Information Systems II	3 Semester Hours
GIS 210	WEB-Based GIS	3 Semester Hours
GIS 220	Introduction to Remote Sensing	3 Semester Hours
GIS 230	Spatial Analysis in GIS	3 Semester Hours
GIS 240	Applications in GIS	3 Semester Hours
GIS 250	Advanced GIS	3 Semester Hours
IST 125	Visual BASIC Programming	3 Semester Hours
IST 269	Database Applications	3 Semester Hours

E. Number of free elective credits remaining: None

F. Requirements for thesis, internship, or other capstone experiences.

A.A.S. Degree
MAFT 297 Internship 6 Semester Hours credit
(Student must complete 240 hours of supervised work in an internship)
One-Year Certificate
None

G. Unique features

The GIS program was approved for start-up funding from a WIRED Grant through the Southeast Workforce Investment Board. TRCC initially started with a short-term certificate program and then expanded that to include two-year A.A.S. degree option and a one-year certificate option to provide additional career options for students in our service area.

FORM SE

STUDENT ENROLLMENT PROJECTIONS

A.A.S GIS Degree

	2011 –2012	2012 – 2013	2013 - 2014	2014 – 2015	2015 - 2016
YEAR	**1**	**2**	**3**	**4**	**5**
Full-time	10	12	20	35	45
Part-time	0	7	10	15	30
Total	10	19	30	50	75

One-Year GIS Certificate

	2011 –2012	2012 – 2013	2013 - 2014	2014 – 2015	2015 - 2016
YEAR	**1**	**2**	**3**	**4**	**5**
Full-time	12	18	25	40	45
Part-time	0	6	15	20	35
Total	12	24	40	60	80

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PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Institution Name: Three Rivers Community College

Program Name: Geographic Information Systems (GIS)

Date: May 4, 2011

Student Preparation

- Any special admissions procedures or student qualifications required for this program, which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required.

  No special preparation will be required.

- Characteristics of a specific population to be served, if applicable.

  It is the policy of Three Rivers Community College not to discriminate on the basis of sex, race, religion, age, national origin, or disability in its educational programs, activities, or employment. All populations will be served.

Faculty Characteristics

- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.

  Normal career and technical education faculty requirements that exist for those teaching in other career and technical education programs will be required. TRCC will select instructors based on a combination of education and work experience in GIS where adjunct faculty is used. Adjunct faculty must meet the same academic and professional requirements for teaching a given course as would be required of full-time faculty to teach the same course on campus.

- Estimated percentage of credit hours that will be assigned to full-time faculty. Please use the term "full-time faculty" (and not FTE) in your descriptions here.

  Full-time faculty members will be assigned at least 15 semester credit hours of the credit hours for major in the A.A.S GIS Degree program and at least 15 semester credit hours for

the One-Year GIS Certificate program. It is anticipated that 50% of the program credit hours will be assigned to full-time faculty. In addition, faculty will be encouraged to become members of the Missouri Association of Career and Technical Education.

- Expectations for professional activities, special student contact, teaching/learning innovation

  The faculty member will be expected to utilize various distance-learning methodologies such as Internet-based and interactive television (ITV) delivery methods.

Enrollment Projections

- Student FTE majoring in program by the end of five years.

  It is anticipated to have 75 student FTE majoring in the A.A.S GIS Degree program and 80 student FTE completing the One-Year GIS Certificate by the end of five years.

- Percent of full-time and part-time enrollment by the end of five years.

A.A.S. GIS Degree	Full-time: 60%
	Part-time: 40%
One-Year GIS Certificate	Full-time: 56%
	Part-time: 44%

Student and Program Outcomes

- Number of graduates per annum at three and five years after implementation.

  A.A.S. GIS Degree
  It is anticipated to have thirty graduates at three years and seventy five at five years.

  One-Year GIS Certificate
  It is anticipated to have forty graduates at three years and eighty at five years.

- Special skills specific to the program.

  None

- Proportion of students who will achieve licensing, certification, or registration.

  None

- Performance on national and/or local assessments, e.g., percent of students scoring above the 50th percentile on normed tests; percent of students achieving minimal cut-scores on criterion-referenced tests. Include expected results on assessments of general education and

on exit assessments in a particular discipline as well as the name of any nationally recognized assessments used.

It is anticipated that the program graduates will score at or above the 50th percentile on the CAAP test administered during the last semester prior to graduation.

It is anticipated that 95% of the program completers will master at least 80% of the state-identified, industry-validated, and TRCC-adapted essential skills for the GIS program.

- Placement rates in related fields, in other fields, unemployed.

  It is anticipated that 100 % of the graduates from the program will be employed in related fields.

- Transfer rates, continuous study.

  It is anticipated that 60% will transfer to a four-year institution for further studies. The courses in the certificate program specific to GIS are designed to transfer to four year universities.

Program Accreditation

- Institutional plans for accreditation, if applicable, including accrediting agency and timeline. If there are no plans to seek specialized accreditation, please provide reasons.

  There are not any state-level accreditations applicable to this program.

Alumni and Employer Survey

- Expected satisfaction rates for alumni, including timing and method of surveys.

  The college conducts a follow-up survey of graduates 180 days after graduation. It is estimated that 80% of the students surveyed will indicate that they are satisfied with the program and feel that they are well prepared for employment in the geographic information systems field.

- Expected satisfaction rates for employers, including timing and method of surveys.

  Employers will be contacted, by phone and/or written survey, as graduates complete the program and begin implementing their new skills in the workplace. It is anticipated that 85-90% of the businesses employing our graduates will be satisfied with the technical skills possessed and demonstrated by our graduates.

  Additionally, informal surveys will be conducted with employers via the Advisory Committee Meetings, internship visits, career fairs, and various employment councils in the area.

Institutional Characteristics

Three Rivers Community College is ideally suited to offering this program. The present faculty has been teaching various subjects related to GIS applications and they are very experienced in their areas of expertise. They have established an excellent reputation with the local business and industry community in the area. Initial response from the public, parents, potential students, and local business leaders has been extremely positive.

Other Relevant Information

General oversight for this program will rest with the Director of Career Education and Workforce Development and the Division Chair for Business, Education, Math, Science and Technology. A program coordinator with teaching responsibilities in the program will be designated to manage the day-to-day operations, program success, and quality control.

Business, Education, Mathematics, Science and Technology
Geographic Information Systems
Associate of Applied Science Degree

Purpose: Career and Technical Education. This program provides students with the skills and knowledge for employment in geographic information systems (GIS) and mapping technology. The program prepares students for entry into a number of fields that utilize GIS technology which includes but is not limited to civil technology, forestry, agriculture, environmental science, criminal justice, emergency planning, and many other industries.

FIRST YEAR: Fall Semester			**Hours**
ENGL	111 [1]	College Writing	3
CIVL	106 [1]	Technical Math I[2] - OR – MATH 153 (or higher)	3
GIS	110	Introduction to Mapping Principles	3
GIS	120	Introduction to Geographic Information Systems	3
IST	125	Visual BASIC Programming	3
GEOG	111	Regional Geography: Eastern World	3
		TOTAL HOURS	**18**

Spring Semester			**Hours**
CIVL	107[1]	Technical Math II[2] - OR – MATH 153 (or higher)	3
PHYS	150	Environmental Geology	4
GEOG	112	Regional Geography: Western World	3
IST	269	Database Applications	3
GIS	140	Geographic Information Systems II	3
		TOTAL HOURS	**16**

SECOND YEAR Fall Semester			**Hours**
ENGL	112 [1]	Advanced College Writing	3
GIS	210	WEB-Based GIS	3
GIS	220	Introduction to Remote Sensing	3
GIS	230	Spatial Analysis in GIS	3
SCOM	110	Public Speaking	3
GIS	240	Applications in GIS	3
		TOTAL HOURS	**18**

Spring Semester			**Hours**
GOVT`	121	National and State Government	3
GIS	250	Advanced GIS	3
CIVL	198	Workplace Readiness	1
MAFT	297	Internship [3]	6
		TOTAL HOURS	**13**

[1]Course has placement requirements
[2]Students planning to transfer to a four-year institution should substitute MATH 163, MATH 164, or MATH 170
[3]Students with extensive full-time industry experience and instructor approval may substitute six-credit hours of approved coursework.

Geographic Information Systems Technology
One Year Geographic Information Systems Certificate

Business, Education, Mathematics, Science and Technology
Purpose: Career and Technical Education. The certificate program is designed to provide students with the skills and knowledge necessary for entry-level employment in the field of geographic information systems (GIS) and mapping technology. It will also provide opportunities for members of the workforce to upgrade and retrain in this rapidly expanding technological field. Students may combine the certificate with an A.A. degree, an A.A.S. degree or a Bachelor's degree to provide more flexibility for employment in forestry, agriculture, environmental science, criminal justice, and many other areas of study that incorporate GIS technology.

Curriculum

Course		**Description**	**Hours**
GIS	110	Introduction to Mapping Principles	3
GIS	120	Introduction to Geographic Information Systems	3
GIS	140	Geographic Information Systems II	3
GIS	210	WEB-Based GIS	3
GIS	220	Introduction to Remote Sensing	3
GIS	230	Spatial Analysis in GIS	3
GIS	240	Applications in GIS	3
GIS	250	Advanced GIS	3
IST	125	Visual BASIC Programming	3
IST	269	Database Applications	3
		TOTAL HOURS	**30**