

Unit Missions

GISC_Mission

Mission statement

The Center for Interdisciplinary Geospatial Information Technologies is an independent unit of the College of Arts and Sciences. The mission of the Center is to provide geospatial services, accessible education and training, and institutional knowledge for geospatial information technologies to the widest possible audience, and particularly, the mid-Delta region. Inherent in this mission is its performance in such a way that our program demonstrates *global leadership* for geospatial information technologies organized around three core areas: Education and Training, Business and Community Development, and Institutional Knowledge.

Delta State University FY2013 Unit Level Report
Department: Geospatial Information Technology Center
Gen Ed Learning Outcomes

 **GIS_202_GE01: Critical and Creative Thinking**

Start: 7/1/2012

End: 6/30/2013

Gen Ed learning outcome (competency)

- a. Demonstrate an understanding of the scientific method
- b. Understand deductive and inductive reasoning and apply these approaches to interpret or present spatial information.
- c. Understand information in a spatial context and appropriately display their interpretation in graphical form through the creation of a map
- d. Understand the broad range of modalities through which spatial science and technologies may be used to better understand the world about them
- e. Use creative processes to design a map using appropriate color selection, symbol selection, thematic domains, scale, and similar concepts.
- f. Author an essay which demonstrates the ability to think critically about climate change.

Data Collection

- a. Demonstrate an understanding of the scientific method
Tracking results of answers to exam questions which require student to list and describe the steps involved in the scientific method. Specific sample questions asked:
Mid-terms exam question: "List the steps involved in the scientific method."
Mid-term or final exam question (essay): "Given the definition of science and technology below, is GIS a science or a technology. Support your answer with examples."
Final exam (essay): "Propose a scientific experiment and describe how you would use the scientific method to prove or refute your hypothesis."
Partial credit is allowed on the exam and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).
- b. Understand deductive and inductive reasoning and apply these approaches to interpret or present spatial information.
This item is tracked through exam questions. Sample questions include:
Mid-term (Fill in the blank): _____ is responsible for deductive school of thought whereas _____ is responsible for inductive.
Final (Short essay): Explain inductive and deductive reasoning. What is the difference between the two?
Students are data are aggregated on this element as Pass/Fail
- c. Understand information in a spatial context and appropriately display their interpretation graphical form through the creation of a map
Students are instructed to create a series of maps related to laboratory exercises in which that are presented with spatial data and must correctly interpret it and display it as a map using GIS software. Students complete 6 such projects worth approximately 50% of their final grade. Partial credit is allowed on the lab assignments and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and

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demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).

- d. Understand the broad range of modalities through which spatial science and technologies may be used to better understand the world about them
Students must read "Maphead" or "The Mapmakers" and author a term paper describing the impact of spatial technologies on today's society.
Partial credit is allowed on the term paper and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).
- e. Use creative processes to design a map using appropriate color selection, symbol selection, thematic domains, scale, and similar concepts.
Students are instructed to create a series of maps related to laboratory exercises in which that are presented with spatial data and must correctly interpret it and display it as a map using GIS software. Students complete 6 such projects worth approximately 50% of their final grade.
Partial credit is allowed on the lab assignments and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).
- f. Author an essay which demonstrates the ability to think critically about climate change.
Students are presented with map data depicting climate change (sea surface temperature, mean global temperature, rainfall, and similar) and must author an essay in which these data are interpreted.
Partial credit is allowed on this assignments and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).

Results of Evaluation

- a. Demonstrate an understanding of the scientific method
Partial credit is allowed on the exam and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).
Mastery: 9 of 15
Comprehension: 2 of 15
Unsatisfactory: 0 of 15
Fail: 4 of 18
Of those failing, 3 of 4 failed to answer the questions (left blank).
- b. Understand deductive and inductive reasoning and apply these approaches to interpret or present spatial information.

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Students are data are aggregated on this element as Pass/Fail

Pass: 11 of 15

Fail: 4 of 15

- c. Understand information in a spatial context and appropriately display their interpretation in graphical form through the creation of a map
Partial credit is allowed on the lab assignments and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).
Mastery: 9 of 15
Comprehension: 2 of 15
Unsatisfactory: 0 of 15
Fail: 4 of 18

- d. Understand the broad range of modalities through which spatial science and technologies may be used to better understand the world about them
Partial credit is allowed on the term paper and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).
Mastery: 3 of 15
Comprehension: 3 of 15
Unsatisfactory: 5 of 15
Fail: 4 of 18

- e. Use creative processes to design a map using appropriate color selection, symbol selection, thematic domains, scale, and similar concepts.

Partial credit is allowed on the lab assignments and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).

Mastery: 9 of 15

Comprehension: 2 of 15

Unsatisfactory: 0 of 15

Fail: 4 of 18

- f. Author an essay which demonstrates the ability to think critically about climate change.
Partial credit is allowed on this assignments and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).
Mastery: 2 of 15
Comprehension: 2 of 15
Unsatisfactory: 7 of 15
Fail: 4 of 18

Use of Results

The results of assessed activities strongly suggest two challenges. The first is lack of student engagement and participation. A review of the 4 of 15 students failing this course indicated that they consistently failed to answer questions, show up to class, and/or turn in assignments. New activities will be added and evaluated with respect to this aspect for Fall 2013 and include: seminar videos which are designed to engage students beyond lecture and software training in a manner which captures student interest, a Facebook page, and the use of the online content management system's discussion function which will allow for more regular communication with students.

The other issue raised is that students regularly struggle to write clearly and coherently. The Center shall work to devise a method of identifying and working with students requiring remedial assistance with writing skills. However, one student was found to be illiterate and referred to the Success Center, Writing Center, and other appropriate resources.

Related Items

 **GE 01: Critical and Creative Thinking**

GIS_202_GE03: Quantitative Skills

Start: 7/1/2012

End: 6/30/2013

Gen Ed learning outcome (competency)

- a. Understand and explain basic spatial statistic methods such as spatial auto-correlation, Geary's C, and Moran's I.
- b. Be able to differentiate between discrete and continuous data types
- c. Understand the process of overlay analysis through the manipulation of raster data types, distance calculations, and the basic analysis (break points, number of classes, mean, median, sum, standard deviation) for the attributes of spatial objects
- d. Demonstrate a basic understanding of triangulation and the Pythagorean Theorem to calculate position
- e. Understand the theoretical numeric construct of the relationship between map projections and coordinate systems

Data Collection

- a. Understand and explain basic spatial statistic methods such as spatial auto-correlation, Geary's C, and Moran's I.
Students are asked to complete an essay demonstrating their understanding of Tobler's First Law of Geography
Partial credit is allowed on the exam and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the

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student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency). Exam questions related to the interpretation of Moran's I and Geary's C statistics are asked on the mid- and final-exams.

Results are evaluated on a pass/fail basis

- b. Be able to differentiate between discrete and continuous data types
Students must differentiate between discrete and continuous data types in at least 2 exam questions.
Questions related to this objective are graded on a pass/fail basis.
- c. Understand the process of overlay analysis through the manipulation of raster data types, distance calculations, and the basic analysis (break points, number of classes, mean, median, sum, standard deviation) for the attributes of spatial objects
Students are required to complete a lab practicum whereby they must add multiple data layers to a map and compute basic statistics using the data provided. The results must be displayed in a map. Partial credit is allowed on the exam and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).
- d. Demonstrate a basic understanding of triangulation and the Pythagorean Theorem to calculate position
Students are provided instruction in the US National Grid Coordinate System and then tasked with completing a land navigation course which required them to apply the Pythagorean Theorem to locate their position and/or the position of a known object.
This training evolution is graded as Mastery (5 of 5 points located), Comprehension (3-4 points located), Unsatisfactory (1-2 points located), and Fail (no points located, the student gave up and wandered off the course to enjoy an adult beverage). If somebody actually reads the latter, I'll change the sentence and give them a quick course in USNG...
- e. Understand the theoretical numeric construct of the relationship between map projections and coordinate systems
Students must differentiate between cylindrical, conic, and azimuthal map projects and explain their relationship to the use of planar or spherical coordinates by answering appropriate exam questions. Example questions include, but are not limited to:
"List 3 types of conical map projections."
"The Mercator Projection is an example of a _____ map projection."
Students are evaluated on a pass/fail basis.

Results of Evaluation

- a. Understand and explain basic spatial statistic methods such as spatial auto-correlation, Geary's C, and Moran's I.
Partial credit is allowed on the exam and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the

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student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).

Mastery: 14 of 15

Comprehension: 1 of 15

Unsatisfactory: 0 of 15

Fail: 0 of 15

Results are evaluated on a pass/fail basis for Moran's I and Geary's C

Pass: 11 of 15

Fail: 4 of 15

- b. Be able to differentiate between discrete and continuous data types
Pass: 11 of 15
Fail: 4 of 15
- c. Understand the process of overlay analysis through the manipulation of raster data types, distance calculations, and the basic analysis (break points, number of classes, mean, median, sum, standard deviation) for the attributes of spatial objects
Partial credit is allowed on the exam and, during the data aggregation process, interpreted by the instructor as "Mastery" (full credit), "Comprehension" (partial credit and demonstration that the student grasps required elements), "Unsatisfactory" (partial credit and a failure to demonstrate competency), and "Fail" (no credit, student fails to answer or demonstrate any competency).
Mastery: 2 of 15
Comprehension: 7 of 15
Unsatisfactory: 4 of 15
Fail: 2 of 15
- d. Demonstrate a basic understanding of triangulation and the Pythagorean Theorem to calculate position
This training evolution is graded as Mastery (5 of 5 points located), Comprehension (3-4 points located), Unsatisfactory (1-2 points located), and Fail (no points located, the student gave up and wandered off the course to enjoy an adult beverage). If somebody actually reads the latter, I'll change the sentence and give them a quick course in USNG...
Master: 6 of 15
Comprehension: 5 of 15
Unsatisfactory: 0 of 15
Fail: 4 of 15
- e. Understand the theoretical numeric construct of the relationship between map projections and coordinate systems
Students are evaluated on a pass/fail basis.
Pass: 9 of 15
Fail: 6 of 15

Use of Results

As with other general education requirements associated with this course, students struggle to demonstrate mastery because they struggle with written communication and/or fail to attend class. Again, attempts to increase student engagement and improve communication will be undertaken in the Fall 2013 semester.

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Additional challenges identified are a difficulty in performing analytic procedures with multiple steps and a lack of basic map skills. Additional time for remediation will be provided in future offerings of this course.

Related Items



GE 03: Quantitative Skills

 **GIS_202_GE04: Inquiry and Technology**

Start: 7/1/2012

End: 6/30/2013

Gen Ed learning outcome (competency)

- a. Successfully complete a minimum of 12 computer-based laboratory exercises using geographic information science and technologies
- b. Use the Internet to find and assess the quality of spatial information
- c. Use word processing and spreadsheet applications to complete assignments

Data Collection

- a. Successfully complete a minimum of 12 computer-based laboratory exercises using geographic information science and technologies
Students are graded on this portion of the lab exercises as pass or fail (where they completed and turned in or not).
- b. Use the Internet to find and assess the quality of spatial information
Students are tasked with constructing a map during a practicum whereby procedures are provided, but the students must discover and correctly use geospatial data discovered using the Internet. This assignment is graded based on Mastery (students find and apply appropriate data), Comprehension (student find but do not correctly apply appropriate data), Unsatisfactory (neither find nor apply), and Fail (do not attempt).
- c. Use word processing and spreadsheet applications to complete assignments
Students must learn and use appropriate technology to compile data and author essays. Further, students must learn and use GIS software to complete assignments. This portion of their assessment is graded as Mastery (students demonstrate the ability to use all software functions for which instruction is provided), Comprehension (students successfully demonstrate the ability to use at least 70% of the software functions for which instruction is provided), Unsatisfactory (students cannot successfully demonstrate the ability to use at least 70% of the software functions for which instruction is provided), and Fail (failure to attempt).

Results of Evaluation

- a. Successfully complete a minimum of 12 computer-based laboratory exercises using geographic information science and technologies
Pass: 11 of 15
Fail: 4 of 15 (did not attempt)
- b. Use the Internet to find and assess the quality of spatial information
This assignment is graded based on Mastery (students find and apply appropriate data), Comprehension (student find but do not correctly apply appropriate data), Unsatisfactory (neither find nor apply), and Fail (do not attempt).
Mastery: 8
Comprehension: 3
Unsatisfactory: 1
Fail: 3
- c. Use word processing and spreadsheet applications to complete assignments
This portion of their assessment is graded as Mastery (students demonstrate the ability to use all software functions for which instruction is provided), Comprehension (students successfully

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demonstrate the ability to use at least 70% of the software functions for which instruction is provided), Unsatisfactory (students cannot successfully demonstrate the ability to use at least 70% of the software functions for which instruction is provided), and Fail (failure to attempt).

Mastery: 2

Comprehension: 9

Unsatisfactory: 0

Fail: 4

Use of Results

The largest challenge with this aspect of the course is again student engagement. Secondary challenges include "getting lost in the software" whereby students are unable to complete complex (more than 5) sequential steps using software. Anecdotal evidence suggests that this is because students are attempting to memorize steps to completing tasks rather than reasoning through the required steps. For example, students challenged by mastery are those who attempt to memorize "Properties | Edit | Font | Change to Bold | Apply Changes" as a series of steps as opposed to those reason that a certain property (bold face font selection) is associated/belongs to a category of settings. Additional data will be collected in Fall 2013 in an attempt to validate this presumption.

Related Items



GE 04: Inquiry and Technology

Section IV.a

Brief Description

The Center for Interdisciplinary Geospatial Information Technologies (IGIT) is an independent unit of the College of Arts and Sciences. The mission of the Center is to provide geospatial services, accessible education and training, and institutional knowledge for geospatial information technologies to the widest possible audience, and particularly, the mid-Delta region. It is our goal to become a self-supporting unit of the University while maintaining cost-effective services for our constituents. The Center is organized around three core areas: education and training, business and community development, and institutional knowledge-and we encourage the participation of all members of the University community, novices and experts alike.

The GIT Center offers both 18- and 27-hour concentrations in Geospatial Technologies in coordination with the university's Bachelor of Science in Interdisciplinary Studies Program and also a concentration in Geospatial Technologies within the Bachelor of Science in Environmental Science Program. An academic Minor and a course of study leading to a Certificate in Geospatial Information Technologies are also offered by the Center. The Certificate in GIT program is a 2-year, 18-credit-hour program of study that meets the requirements for a formal minor area of study in spatial technologies. Matriculated students will earn both the certificate and minor whereas non-matriculated students may earn only the certificate. Students are provided with basic and then advanced skills in remote sensing, GIS, and GPS using cutting edge technologies in our state-of-the-art teaching laboratory.

Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section IV.b

Comparative data

Enrollment, CHP, majors, graduation rates, expenditures, trends, etc.

Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

[Trend data for GIT for 2009-2013](#)

Sources

[GIT Trend Data 2009-2013](#)

Section IV.c

Diversity Compliance Initiatives and Progress

Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section IV.d

Economic Development Initiatives and Progress Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section IV.e

Grants, Contracts, Partnerships, Other Accomplishments

- 1 Brooks TJ and Boone R. (2013). A State-Wide Hazard Mitigation Update: Infrastructure Interdependencies. Mississippi Emergency Management Agency. \$213,000.
- 1 Brooks TJ. Document Management Using Geospatial Technologies for Rural Civil Engineering. Civil Solutions Services. \$30,000.
- 1 Brooks TJ. An Addressing Schema for Tallahatchie E-911 and NextGen Services. Tallahatchie County, MS. \$9,250.
- 1 Brooks TJ (2012). Contracted research and development. Federal Emergency Management Agency. \$70,868.
- 1 Brooks TJ (2012). Web mapping services for the Yazoo-Mississippi Delta Levee District. Yazoo-Mississippi Delta Levee District. \$40,000.
- 1 Brooks TJ (2012). A letter-sized atlas of US military installations. Department of the Army (sub-contracted through TerraGo Technologies). \$74,000.
- 1 Brooks TJ (2012). GeoPDF Training. Department of the Army (sub-contracted through TerraGo Technologies). \$78,000

Judgment

- Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section IV.f

Service Learning Data

List of projects, number of students involved, total service learning hours, number of classes, faculty involved, accomplishments.

Judgment

- Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section IV.g

Strategic Plan Data

Only use this section if you have strategic plan info to report that is not covered in other areas of your report

Judgment

- Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section IV.h

Committees Reporting To Unit

Each unit includes in the annual plan and report a list of the committees whose work impacts that unit or any other aspect of the university; along with the list will be a notation documenting the repository location of the committee files and records. Committee actions affecting the unit's goals may be noted in other applicable sections of the annual reports. Not required to be included in the unit's annual plan and report, but required to be maintained in the repository location, will be a committee file that includes, for each committee: Mission and by-laws, Membership, Process, Minutes.

Judgment

- Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section V.a

Faculty (Accomplishments)

Noteworthy activities and accomplishments

- 1 National Fire Protection Association Technical Committee for Data Exchange for the Fire Service (2010-Present). This committee is charged with developing a plan to assist fire departments with implementing technology and the authoring of a standard which enables seamless data transfer, including geospatial components, among all operational and analytic elements of the fire service.
- 1 Member, National Association for Search and Rescue (2005-Present). Assisted with alpha course development for fundamentals of land search and rescue management (with Dr. Donald Cooper). Provide basic land navigation and map reading exercises for various emergency response organizations on a volunteer basis.
- 1 Mississippi Emergency Management Agency (volunteer). Act as one of the operations group directors for scalable implementation of geospatial services during a time of crisis.
- 1 Chief Engineer, Bolivar County Volunteer Fire Department, MS (2010-Present).
- 1 National Geospatial Advisory Committee (2013-2016). Appointed by Secretary of Interior Salazar.
- 1 President, Geospatial Information and Technology Association (2013). President-Elect (2012),

Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section V.b

Staff (Accomplishments)

Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section V.c

Administrators (accomplishments)

Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section V.d

Position(s) requested/replaced with justification

Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section V.e

Recommended Change(s) of Status

Resignations-Subramanian Swaminathan

Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

Section VI.a

Changes Made in the Past Year Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

Changes made in the past year:

Recommended changes for the coming year(s):

Section VI.b

Recommended Changes for the Coming Year Judgment

Meets Standards Does Not Meet Standards Not Applicable

Narrative

Credit Hour Production							
	Summer		Fall		Spring		Total
	UG	GR	UG	GR	UG	GR	
GIS							
AY 2013	9	84	99	78	97	39	406
AY 2012	24	7	134	132	99	96	492
AY 2011	43	30	312	31	221	28	665
AY 2010	21	9	434	25	324	40	853
AY 2009	44	3	258	18	313	16	652
REM							
AY 2013	9	9	0	0	45	36	99
AY 2012	3	0	6	0	0	30	39
AY 2011	6	3	33	12	18	0	72
AY 2010	0	0	18	6	27	12	63
AY 2009	3	0	9	0	21	6	39
AY Totals							
AY 2013	18	93	99	78	142	75	505
AY 2012	27	7	140	132	99	126	531
AY 2011	49	33	345	43	239	28	737
AY 2010	21	9	452	31	351	52	916
AY 2009	47	3	267	18	334	22	691

Enrollment by Major						
	Summer		Fall		Spring	
	UG	GR	UG	GR	UG	GR
Geospatial Information Technology						
AY 2013	0	11	0	15	0	7
AY 2012	0	0	0	14	0	27
AY 2011	0	0	0	0	0	0
AY 2010	0	0	0	0	0	0
AY 2009	0	0	0	0	0	0
AY Totals						
AY 2013	0	11	0	15	0	7
AY 2012	0	0	0	14	0	27
AY 2011	0	0	0	0	0	0
AY 2010	0	0	0	0	0	0
AY 2009	0	0	0	0	0	0

Graduates		
GIT	MAS	Total
AY 2013	10	10
AY 2012	0	0
AY 2011	0	0
AY 2010	0	0
AY 2009	0	0