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| **1. Course title/number, number of credit hours** |  |  |  |
| Fundamentals of Surveying - SUR 2101 | 2 credit hours |  |  |  |
| **2. Course prerequisites, corequisites, and where the course fits in the program of study** |  |  |  |
| *Prerequisites*: MAC 1114 with minimum grade of “C” or permission of instructorThis course is an elementary surveying course designed to introduce surveying and mapping concepts.*Corequisite*: SUR2101L – Fundamentals of Surveying Lab (1-credit) |  |  |  |
| **3. Course logistics** |  |  |  |
| *Term*: Spring 2015This is a classroom lecture/laboratory course*Class location and time*: M 1:00-3:50 PM, FL 424 |  |  |  |
| **4. Instructor contact information** |  |  |  |
| *Instructor’s name**Office address**Office Hours* *Contact telephone number**Email address* | Aneesh Goly, Ph.D.Boca Raton campus, building EG-36, room 229By appointment(561) 685-2254 (cellular)agoly@fau.edu |  |  |  |
| **5. TA contact information** |  |  |  |
| *TA’s name**Office address**Office Hours* *Contact telephone number**Email address* | Dylan O'BerryBoca Raton campus, building EG-36, room 22911:00 to 1:00 PM, Tuesday(561) 526-3855 (cellular)aoberry@my.fau.edu |  |  |  |
| **6. Course description** |  |  |  |
| Concepts, theory and applications of basic measurement methods used in geospatial data acquisition, such as distance, direction and angle measurements, traverse computation, leveling and height determination, trigonometric leveling, topographic surveying, horizontal and vertical curves, terrestrial positioning using GPS and GIS. Labs synchronized with the lectures. |  |  |  |
| **7. Course objectives/student learning outcomes/program outcomes** |
| *Course objectives* | 1. Understand basic survey measurement theory.
2. Classify measurement error as random, systematic, or blunders/mistakes.
3. Compute planimetric positions.
4. Obtain spirit-leveled elevations.
5. Understand and apply the fundamental properties of the horizontal and vertical models.
6. Understand the use of plan and profile sheets for design.
7. Understand the definitions of coordinate systems and datum.
8. Discuss the role of key governmental agencies in the surveying and mapping field
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| *Student learning outcomes**& relationship to Program/ABET**a-k outcomes* | 1. Use electronic total stations to measure differences in elevation, horizontal and vertical angles, and distances (a, b, d, e, f, g, k).
2. Observe and compute elevations from differential and trigonometric leveling observations (a, b, d, e, f, g, k).
3. Interpret topographic maps based on knowledge of the various data sources and measurement technologies (a, b, d, e, f, g, k).
4. Compute parameters of a horizontal circular transition curve and elevations along an equal-tangent parabolic vertical transition curve (a, b, d, e, f, g, k).
5. Understand basic concepts of positioning using Global Navigational Satellite Systems using static and kinematic methods a, b, d, e, f, g, k
6. List and describe applications of GIS technology to engineering projects (a, b, c, e, f, j, k)
7. Describe types of distance measurement and their sources of error (a, b, d, e, f, g, k)
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| *Relationship to Geomatics Engineering educational objectives (H: High; M: Medium; L: Low)* | **Objective A: Practice geomatics engineering** within the general areas of boundary and land surveying, geographic information systems (GIS), photogrammetry, remote sensing, mapping, geodesy, and global navigation satellite positioning systems in the organizations that employ them. | H |
| **Objective B: Advance their knowledge** of geomatics engineering, both formally and informally, by engaging in lifelong learning experiences including attainment of professional licensure, and/or graduate studies. | L |
| **Objective C: Serve as effective professionals**, based on strong interpersonal and teamwork skills, an understanding of professional and ethical responsibility, and a willingness to take the initiative and seek progressive responsibilities. | L |
| **Objective D: Participate as leaders** in activities that support service to, and/or economic development of, the region, the state and the nation. | H |
| **8. Course evaluation method** |  |  |  |
| Field labs: 40%Quizzes: 10%Exams (I&II): 20%Final Exam: 30% | *Note*: The minimum grade required to pass the course is C. |  |  |  |
| **9. Course grading scale** |  |  |  |
| See the supplementary *Course Policies Document*. |  |  |  |
| **10. Policy on makeup tests, late work, and incompletes** |  |  |  |
| *Makeup tests* are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of participating in the exam. Makeup exam will be administered and proctored by department personnel unless there are other pre-approved arrangements.*Late work* is not acceptable.*Incomplete grades* are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given. |  |  |  |
| **11. Special course requirements** |  |  |  |
| Students must check their official FAU electronic mail accounts and the official course web page (Blackboard) on a daily basis for announcements and other correspondence. |  |  |  |
| **12. Classroom etiquette policy** |  |  |  |
| University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions. |  |  |  |
| **13. Disability policy statement** |  |  |  |
| In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Raton campus, SU 133 (561) 297-3880 and follow all OSD procedures. |  |  |  |
| **14. Code of Academic Integrity** |  |  |  |
| Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at 27TU[www.fau.edu/regulations/chapter4/4.001\_Code\_of\_Academic\_Integrity.pdf](http://www.fau.edu/regulations/chapter4/4.001_Honor_Code.pdf)U27T. |  |  |  |
| **15. Required texts/reading** |  |  |  |
| 1. Official Course Policies document, available on the official course web page (Blackboard).
2. Ghilani & Wolf, Elementary Surveying, An Introduction to Geomatics, 15PthP edition (2015). I recommend purchasing a used copy. Any edition from the 12PthP to 15PthP is acceptable.
3. A field book (i.e. http://goo.gl/c902x2)
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| **16. Supplementary/recommended readings** |  |  |  |
| See the official course web site on Blackboard. |  |  |  |

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| **17. Course topical outline, including tentative dates for exams/quizzes, papers, completion of reading, and other exercises** |
| **Lectures** |
| Week# | Date | Topic |
| Week 1 | Jan 05 | Introduction To Course And Geomatics As A Profession (CH 1) |
| Week 1 |  | Measurement Theory (CH 2) |
| Week 2 | Jan 12 | Distance Measurement (CH 6) |
| Week 2 |  | Distance Corrections (CH 3) |
| Week 3 | Jan 26 | Introduction To Leveling (CH 4) |
| Week 3 |  | Differential Leveling (CH 5) |
| Week 4 | Feb 02 | Leveling Calculations (CH 5) |
| Week 4 |  | Angles And Directions (Az & Br) (CH 7) |
| Week 5 | Feb 09 | Angles And Directions (Compass) (CH 7) |
| Week 5 |  | **Exam I** |
| Week 6 | Feb 16 | Angle And Directions (Total Station) (CH 8) |
| Week 6 |  | Angular Discussion (CH 8) |
| Week 7 | Feb 23 | Traverse Adjustment And Area (CH 9) |
| Week 7 |  | Traverse Adjustment And Area Computation (CH 10) |
| Week 8 | Mar 09 | Topographic Surveying (CH 18) |
| Week 9 | Mar 16 | Concept Review |
| Week 9 |  | Coordinate Systems (CH 20) |
| Week 10 | Mar 23 | Horizontal Curves (CH 24) |
| Week 10 |  | Vertical Curves (CH 25 |
| Week 11 | Mar 30 | Boundary Surveys (CH 21) |
| Week 11 |  | Geographic Information Systems (GIS) (CH 28) |
| Week 12 | Apr 6 | Geographic Information Systems (GIS) (CH 28) |
| Week 12 |  | **Exam II** |
| Week 13 | Apr 13 | Introduction To GPS (CH 13) |
| Week 13 |  | Static GPS (CH 14) |
| Week 14 | Apr 20 | Kinematic GPS (CH 15) |
| Week 14 |  | Final Exam Review |