DASC 2594\_Multivariable Math for Data Scientists\_Unit #5\_ Multiple Integration

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| **Stage 1 Desired Results** | | |
| ESTABLISHED GOALS  **Timeframe:** (maximum) 6 days  **Lesson Plans Referenced**:   * DASC 2594\_Unit 5\_Lesson Plan 12\_Multiple Integration | ***Acquisition*** | |
| *Students completing Unit 5 of DASC 2594 should be able to:*   * Perform multiple integration * Understand how regions of integration can be switched * Change coordinates to perform multiple integration | *Students will be skilled at…*   * Integration over multivariable functions * Changing order of integration using Fubuini’s theorem |
| ***Meaning*** | |
| UNDERSTANDINGS  *Students will understand …*   * How multiple integrals are a measure of volume * When it is allowed to change order of integration * How to use Jacobians to change coordinates | ESSENTIAL QUESTIONS   1. What are multiple integrals? 2. How can you apply iterated integrals? Under what conditions can the order of integration change? 3. How do multiple integrals give a measure of volume? 4. What are Jacobians? Why are Jacobians important? |
| ***Transfer*** | |
| *Students will be able to independently use their learning to…*   * Solve multiple integration problems * Understand the role of multiple integration evaluating normalizing constants in probability distributions * Apply multiple integration to probability distributions | |
| **Stage 2 - Evidence** | | |
| **Evaluative Criteria** | **Assessment Evidence** | |
| Rubric Names: | PERFORMANCE TASK(S)    *Pre-Test:*  *Formative Assessment :*   * *HW 14: Multiple Integration*   *Summative Assessment:*   * Final Exam (In class and take home) | |
|  | OTHER EVIDENCE:   * In class questions using learning software (google forms, etc.) * Student feedback and questions | |
| **Stage 3 – Learning Plan** | | |
| *Summary of Key Learning Events and Instruction*  *Unit #5 (maximum) 6 days*  Textbook: To be determined (likely will be primarily based on class lecture notes)  Technology: RStudio /RStudio Server / RStudio Connect;  Prerequisite Knowledge/Course(s): Fundamental understanding of Calculus at the level of Calculus II and ability to program in R  **Activity 1 (6 days):**  List Topic Refer to DASC 2594\_Unit 5\_Lesson Plan 12\_Multiple Integration | | |

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| **Learning Accommodations** | |
| **Student Accommodations** | **Accelerated Students** |
| Compliance/ADA/504 | Challenge Students who want/need more |