Name:

Fill in your class schedule, any regular work/ministry/exercise/activities, and when you plan to fit your study time in each week. I recommend that you commit to finding time between 7am and 11pm to complete your work and reserve 11pm to 7am as sleeping/bible study/etc. time.

Study times should be at least 45 minutes in length. Identify at least one hour that you will use for cumulative review each week. If you know that you will likely “miss” one of your study sessions each week, plan an extra 2+ hours for study.

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Thursday | Friday | Saturday | Sunday | Monday | Tuesday | Wednesday |
| 7am |  |  |  |  |  |  |  |
| 8am |  |  |  |  |  |  |  |
| 9am |  |  |  |  |  |  |  |
| 10am |  |  |  |  |  |  |  |
| 11am |  |  |  |  |  |  |  |
| Noon |  |  |  |  |  |  |  |
| 1pm |  |  |  |  |  |  |  |
| 2pm |  |  |  |  |  |  |  |
| 3pm |  |  |  |  |  |  |  |
| 4pm |  |  |  |  |  |  |  |
| 5pm |  |  |  |  |  |  |  |
| 6pm |  |  |  |  |  |  |  |
| 7pm |  |  |  |  |  |  |  |
| 8pm |  |  |  |  |  |  |  |
| 9pm |  |  |  |  |  |  |  |
| 10pm |  |  |  |  |  |  |  |

Did you read the SOA Exam SRM syllabus?

Identify your approximate test date:

Identify when you want to be focusing on just practice exams:

Determine how you will assess your progress each week to see if you are on schedule to be ready for your exam:

Complete the following three pages. Evaluate your proposed timeline. Will your current study plan allow you to have enough time to spend on just practice exams prior to your exam date?

Estimate your current % of understanding for each topic. Estimate the number of additional hours you need to invest in the topic to get to A-level understanding. Use the number of additional hours needed to determine a target completion date for each topic.

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| --- | --- |
| Completion Date: | 1. **Topic: Basics of Statistical Learning (5-10%)**  |
| **Learning Objectives**  |
| The Candidate will understand key concepts of statistical learning.  |
| **Learning Outcomes**  |
| %hours | The Candidate will be able to: 1. Define terms used to classify the types of modeling problems and methods, including supervised versus unsupervised learning and regression versus classification.
2. Compare the common methods of assessing model accuracy.
3. Understand how the bias-variance tradeoff impacts the selection of statistical learning methods.
4. Understand resampling methods used for model validation, including
* Training set vs. test set approach
* *k*-fold cross-validation
* Leave-one-out cross-validation
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| Completion Date: | **2. Topic: Linear Models (40-50%)**  |
| **Learning Objectives**  |
| The Candidate will understand key concepts concerning generalized linear models.  |
| **Learning Outcomes**  |
| %hours | The Candidate will be able to: 1. Compare model assumptions for ordinary least squares and generalized linear models.
2. Identify the members of the exponential family of distributions and corresponding link functions.
3. Apply the business context of a problem to interpret parameters.
4. Interpret diagnostic tests of model fit and assumption checking, using • Graphical methods
* Quantitative methods
1. Select an appropriate model, considering
* Distributions and link functions
* Variable transformations and interactions
* t and F tests
* AIC and BIC
* Likelihood ratio test
1. Calculate and interpret predicted values, and confidence and prediction intervals.
2. Understand how approaches may differ compared to using an ordinary least squares model, including
* Regularized regression (lasso, ridge regression)
* *K*-nearest neighbors
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| Completion Date: | **3. Topic: Time Series Models (10-15%)**  |
| **Learning Objectives**  |
| The Candidate will understand key concepts concerning regression-based time series models.  |
| **Learning Outcomes**  |
| %hours | The Candidate will be able to: 1. Define the concepts and components of stochastic time series processes, including random walks, stationarity, and autocorrelation.
2. Describe specific time series models, including, exponential smoothing, autoregressive, and autoregressive conditionally heteroskedastic models.
3. Calculate and interpret predicted values and confidence intervals.
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| Completion Date: | **4. Topic: Decision Trees (20-25%)**  |
| **Learning Objectives**  |
| The Candidate will understand key concepts concerning decision tree models.  |
| **Learning Outcomes**  |
| %hours | The Candidate will be able to: 1. Describe the construction of decision trees, including
* How they are optimally fit to training data
* How they are pruned to mitigate overfitting
1. Predict outcomes using:
* Classification trees
* Regression trees
1. Describe bagging, boosting, and random forests and the hyperparameters used to control them.
2. Compare decision trees to linear models including uses and relative strengths.
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| Completion Date: | **5. Topic: Unsupervised Learning Techniques (10-15%)**  |
| **Learning Objectives**  |
| The Candidate will understand key concepts concerning principal component and cluster analysis.  |
| **Learning Outcomes**  |
| %hours | The Candidate will be able to: 1. Define principal components, including how they are calculated.
2. Interpret the results of a principal components analysis, considering loading factors and proportion of variance explained.
3. Describe and compare the algorithms for:
* *K*-means clustering
* Hierarchical clustering
1. Explain methods for deciding the number of clusters.
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* Read “How I Passed My Final SOA Exam” by Michael McDermid from *Actuary of the Future* Issue 30, May 2011. (see <https://www.soa.org/globalassets/assets/library/newsletters/actuary-of-the-future/2011/may/afn-2011-iss30-mcdermid.pdf>)
* Read “Finding More Time in a Day” by Mindy Moss (see <https://www.casact.org/newsletter/article/finding-more-time-day-tips-and-tricks-get-those-study-hours>)
* Review *Actuarial Exam Tactics*

Give a detailed, specific summary of how you plan to ensure that your study is both effective and efficient this semester. Consider including comments on time limits, goals for individual sessions, start-up costs, self-imposed pressure, etc.