variables.

- **{PSC** Employ mathematical techniques to assess the quality of data and find the suitable specification for different types of datasets.
- Engage in lifelong learning, reflective thinking and self-assessment.
- Communicate effectively in verbal, written and group contexts to a professional standard.

## TEACHING STRATEGIES

The teaching strategies that will be used and their rationale. Give some suggested approaches to learning in the course.

(An example of the approaches to learning are)

| | |
|---|---|
| **Private Study** | ¶ Review lecture material and textbook<br>¶ Do set problems and assignments<br>¶ Join Moodle discussions of problems<br>¶ Reflect on class problems and assignments<br>¶ Download materials from Moodle<br>¶ Keep up with notices and find out marks via Moodle |
| **Lectures** | ¶ Find out what you must learn<br>¶ See methods that are not in the textbook<br>¶ Follow worked examples<br>¶ Hear announcements on course changes |
| **Workshops** | ¶ Be guided by Demonstrators<br>¶ Practice solving set problems<br>¶ Ask questions |
| **Assessments** | ¶ Demonstrate your knowledge and skills<br>¶ Demonstrate higher understanding and problem solving |
| **Laboratory Work** | ¶ Hands-on work, to set studies in context |

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**COURSE PROGRAM**

A table of lectures and workshops or practical class topics for each week, indicating the name of lecturer involved (where multiple lecturers teaching in course), online activities, such as discussion forums, and relevant readings from textbook and other reference material identified for the course.

**Term 2 2020**

| Date | Topic | Lecture Content | Demonstration Content |
|---|---|---|---|
| 04/06/2020<br>(Week 1) | Introduction to transport modelling<br>Statistical inference | Basics of econometrics<br>Review of statistics and probabilities<br>Statistical hypothesis testing | Introduction to R |
| 11/06/2020<br>(Week 2) | Statistical inference<br>Regression analysis | Two-variable regression assumptions<br>Dummy variables | Running regression in R |
| 18/06/2020<br>(Week 3) | Regression analysis | Multiple regression analysis<br>Multicollinearity<br>Count data | Running multiple regression in R |
| 25/06/2020<br>(Week 4) | Regression model troubleshooting | Heteroscedasticity<br>Autocorrelation | Heteroscedasticity and autocorrelation |
| 02/07/2020<br>(Week 5) | Regression Model<br>Time Series | Time series formulations and Count Data | Running time series in R |
| 09/07/2020<br>(Week 6) | | ***Flexibility week for all courses (non-teaching)*** | |
| 16/07/2020<br>(Week 7) | Discrete choice | Basic definitions<br>Choice set<br>Logit models | Running logit with biogeme |
| 23/07/2020<br>(Week 8) | Discrete choice | Nested logit | Running nested logit with biogeme |
| 30/07/2020<br>(Week 9) | Discrete choice | Ordered logit | Running survival analysis in biogeme |

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Assignment 1 and quiz 1 – Linear regression

Assignment 2 and quiz 2 – Count and time series regression

Assignment 3 and quiz 3 – Discrete choice models

Format of the assignments:

- Have a cover letter.
- Each question starts from the top of the page
- Reference your work appropriately, if not, you may be penalized for plagiarism.

**ASSESSMENT OVERVIEW**

| **Item** | **Available date** | **Weighting** | **Learning outcomes assessed** | **Assessment Criteria** *(this needs to explicitly describe what students are expected to demonstrate in the task)* | **Due date** | **Deadline for absolute fail** | **Marks returned** |
|---|---|---|---|---|---|---|---|
| 1.Quizzes | | | | | | | |
| Quiz 1 | 18/06/2020 10:00 | 3 | Comprehensive understanding of basic statistics and probabilities | Students will be assessed based on the accuracy and validity of their submitted solutions to the questions. | 18/06/2020 10:15 | 18/06/2020 10:15 | 18/06/2020 10:15 |
| Quiz 2 | 25/06/2020 10:00 | 3 | Understanding about the basic assumptions behind linear regression models. | Students will be assessed based on the accuracy and validity of their submitted solutions to the questions. | 25/06/2020 10:15 | 25/06/2020 10:15 | 25/06/2020 10:15 |
| Quiz 3 | 02/07/2020 10:00 | 3 | Potential troubles resulting from violating the assumptions and common remedies for them. | Students will be assessed based on the accuracy and validity of their submitted solutions to the questions. | 02/07/2020 10:15 | 02/07/2020 10:15 | 02/07/2020 10:15 |
| Quiz 4 | 16/07/2020 10:00 | 3 | Time series regression and count data | Students will be assessed based on the accuracy and validity of their submitted solutions to the questions. | 16/07/2020 10:15 | 16/07/2020 10:15 | 16/07/2020 10:15 |
| Quiz 5 | 06/08/2020 10:00 | 3 | Discrete choice modelling | Students will be assessed based on the accuracy and validity of their submitted solutions to the questions. | 06/08/2020 10:15 | 06/08/2020 10:15 | 06/08/2020 10:15 |

| 2. Assessments | | |
|---|---|---|
| Assignment 1 | 11/06/2020 | 15 |



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## RELEVANT RESOURCES

Material essential for this course is provided in lecture notes available through Moodle.
Suggested references are listed below:

- Gujarati, D.N. (2004) Basic Econometrics, 4th Edition, McGraw Hill
- Casella, G., and R.L. Berger (2001) Statistical Inference, 2nd Edition, Duxbury Press
- Train, K. (2009) Discrete Choice Methods with Simulation, 2nd Edition, Cambridge University Press
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