

Supporting Statistics Research Postgraduates to Teach Quantitative Data Analysis to Postgraduate Students Without a Statistics Background

A collaboration between the Department of Statistics and Centre for Learning Enhancement And Research (CLEAR), The Chinese University of Hong Kong

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Overview of the Training Programme for Department of Statistics Research Postgraduates

Thank you for participation in “*Statistical Methods for Research Students*”, which the shortened version of the rather long project title you can see at the top of this page. This document provides the guidelines and structure of our project’s training programme which, should you complete it, will

- Teach you what challenges students may have when learning statistics, what they want from workshops and how to design your workshop;
- Involve you recording pre-workshop videos and writing workshop materials;
- Conducting your workshop in face-to-face mode to CUHK research postgraduates without a statistics background;
- Take about 35 hours of your time, for which you will receive a remuneration of \$7000;

If you have any questions or concerns, please contact Dr. John Wright at jawright@cuhk.edu.hk.

Programme Details

Here are the steps for completing the training programme. The training programme is expected to take around 35 hours to complete.

1. **Complete the pre-training questionnaire (0.5 hour):** Please complete the pre-training questionnaire, which asks for your views and understanding of teaching students without a statistics background. Submit your completed questionnaire to Dr. Wright.
2. **Watch the training videos and related materials (2 hours):** We have developed a series of 8 micro-modules that address the difficulties and anxiety in learning statistics for non-statistics background students, their learning needs, suggestions on planning workshops and suitable instructional techniques. You can access the micro-modules anytime on YouTube (see the links on our project’s homepage: <https://www.sta.cuhk.edu.hk/jawright/Stats4RPgs/>). Furthermore, we will share a

summary of reflections from previous Stat RPGs, which can help you learn from others' experiences. We've also compiled a list of references cited in the videos for those interested in further reading. This list is available at the end of the document.

3. **Class Observations and Being a Teaching Assistant in an Elementary SPSS Workshop (3 hours):** Our past experience with Statistics RPGs has shown that observation and interaction are key to assisting students without a background in statistics. We invite you to join us as a Teaching Assistant in an IPL workshop titled "Elementary Data Analysis for Quantitative Research by SPSS." This workshop, organized by CLEAR and the Graduate School, taught by Prof. Yau. During the workshop, you'll have the opportunity to observe potential students and Prof. Yau's teaching methods, as well as provide in-person technical support to students. The next session is scheduled for March 27, 2024. We also encourage you to attend another IPL workshop, "Advanced Data Analysis for Quantitative Research by SPSS," on April 24, 2024. Also taught by Prof. Yau, this workshop will help familiarize you with the use of SPSS for advanced statistical methods.
4. **Develop your workshop with the guided teaching plan (3 hours):** After watching the micro-modules and observing your potential students, you will better understand the difficulties and learning needs of research postgraduates without a background in statistics, as well as effective teaching strategies. Your next task is to complete a teaching plan using the step-by-step guide provided (see the document "Teaching Plan for Workshop" available on <https://www.sta.cuhk.edu.hk/jawright/Stats4RPGs/>). You can choose a topic based on our suggestions (in page 4), or discuss with Dr. Wright for other suggestions. You may choose to organise either two 3-hour workshops or a 6-hour workshop divided into two 3-hour sessions. Once you have completed your teaching plan, please submit it to Dr. Wright and schedule your first meeting.
5. **Meet with Dr. Wright for feedback on the teaching plan (2 hour):** The objective of the meeting is to discuss your teaching plan and receive feedback and guidance to improve it together with Dr. Wright.
6. **Prepare pre-workshop videos and learning materials (12 hours):** Following the meeting, your next step is to prepare pre-workshop videos and presentation slides that include examples and hands-on exercises using statistical software. These materials should align with the revised teaching plan and reinforce the content covered in the training videos. If you need technical assistance in video production, such as borrowing equipment (e.g. professional microphone), please do not hesitate to contact Dr. Wright.
7. **Second meeting with Dr. Wright and refining teaching materials (6 hours):** After tailoring the learning materials, please send them to Dr. Wright and schedule

a follow-up meeting. During this meeting, Dr. Wright will provide detailed feedback and suggestions to help you refine your materials. The face-to-face workshops will be scheduled at least one month later to give you time for revisions. Once your materials are finalised, please upload the pre-workshop videos, presentation slides, and data to the KEEP course platform. CLEAR will then organise and promote the workshops.

8. **Conduct in-person workshops (6 hours):** Here are some suggestions to ensure that the workshops run smoothly:

9. **Complete the post-training questionnaire (0.5 hours):** You will receive a summary of the student evaluations of the workshop one week after. Please complete the post-training questionnaire to evaluate your experience and the effectiveness of the training programme. Your feedback will help us review and improve. In the future, you may be invited to share your experience with your successors in the next round of the training programme.

Suggested timeline

Feb to Mar	• First meeting with project team • Complete pre-workshop questionnaire • Go through the micro-moudles and related materials
Mar to Apr	• Attend and serve as a teaching assistant in an IPL workshop titled "Elementary Data Analysis for Quantitative Research" by SPSS on March 27th, and “Advanced Data Analysis for Quantitative Research by SPSS,” on April 24th (Optional)
On or before May	• Complete the teaching plan • First meeting with Dr. Wright
May to July	• Complete the draft teaching materials, including pre-workshop videos • Second meeting with Dr. Wright • Revising the teaching materials based on feedback.
On or before end of July	• Upload the pre-workshop videos to the course platform. • Contact CLEAR to schedule face-to-face workshops
Aug	• Finalizing teaching materials and upload to the course platform
Sep	• Conduct your two face-to-face workshops
Oct	• Attend sharing sessions with project team and invited participants • Complete post-workshop questionnaire

List of suggested workshop topics

- Review of Basic Statistics
- Multiple Linear Regression
- Linear models for Binary data, Multinomial data, and Count data
- Linear models for Repeated measured data
- Analysis of Variance
- (Generalized) Linear Mixed Model
- Exploratory and Confirmatory Factor Analysis
- Basic Structural Equation Modelling
- Non-parametrics methods
- Cluster Analysis
- Machine Learning Techniques

If you would like to organize workshops on topics that you believe would be beneficial to research students but are not listed above, please feel free to suggest them to Dr. Wright.

List of suggested references

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