B.Sc. (Honours) Statistics Degree Program
Faculty of Applied Sciences
University of Sri Jayewardenepura

Course Title	**Statistical Consultancy**
Course Code	**STA 474 2.0**
Credit Value	02
Status	Core
Year/ Level	Year 4
Semester	2
Theory: Practical: Independent Learning	15 : 30 : 55
Other: Pre-requisite course/s	All statistics course units

Aims of the Course:

STA 474 2.0 provides students with an opportunity to gain practical experience in consulting through various projects with clients through the Statistical Consulting Service, University of Sri Jayewardenepura. The overall aim of STA 474 2.0 is

- to provide students with practical consulting and communication skills, such as how to present results verbally and in a written report, and

- how to work cooperatively with other statistical consultants.

Intended Learning Outcomes:

On the successful completion of this course, the student should be able to:

1. Explain and demonstrate the role of a good statistical consultant.
2. Use open source statistical software to apply statistical methods and techniques.
3. Select and apply appropriate statistical models and methods for a range of statistical problems.
4. Interpret the results of analysis and communicate these to a broad audience.
5. Write statistical consulting reports that clearly describe complex analyses to the non-specialist reader.
6. Communicate through written and oral presentation based on statistical analysis for audience from a variety of health-related areas (e.g. public health, medicine, genetics, biology, psychology, nursing, or pharmacy) and for the broad scientific community.

Course Content:

1. About statistical consulting

    1.1. Communication

    1.2. Asking questions

    1.3. Managing a statistical consultancy session

    1.4. Dealing with difficult clients

    1.5. Consulting from start to finish

2. Guide to communicating results

   2.1. Communicating results to general audience

   2.2. Making a targeted presentation: Who is your audience?, Common errors to watch out, Engaging with non-expert audience

3. Technical aspects of consulting

   3.1. Design of experiments and Sampling

   3.2. Observational studies

   3.3. Data wrangling: Tidy data principles, Reshaping data into tidy form, Data transformation

   3.4. Data visualization: The grammar of graphics

   3.5. Static graphics vs Dynamic graphics

   3.6. Dynamic reproducible reporting

Scope and Schedule of Teaching - Learning Activities:

Topic No.	Topic/Sub Topic	No. of Hrs			Teaching Method	Assessment Criteria	ILO Alignment
		T	P	IL			
1	About statistical consulting	1	2	5	Lecture **FA1: blog post**	10% of Final Marks	1
2	Guide to communicating results	1	2	5	Lecture/ Discussion		1, 6
3	Design Experiments and Sampling, Observational Studies	1	2	3	Lecture/ Flipped classroom **FA2-i: DSjobtracker survey**	5% of Final Marks	2, 3
4	Data wrangling	0	3	5	Lecture/ Discussion **FA2-ii: Data Wrangling**	5% of Final Marks	2, 3
5	Data Visualisation	1	2	4	Lecture/ Discussion **FA2-iii: Data Visualisation**	5% of Final Marks	3, 4
6	Data Visualisation	1	2	3	Lecture/ Discussion/ Revise graphics in FA2-iii		3, 4
7	Dashboards	1	2	3	Lecture/ Discussion/ **FA2-iv: Dashboard**	5% of Final Marks	4, 6
8	Statistical consultancy with clients	1	2	3	Lecture/ Discussion **FA3: Client's project 1**	15% of Final Marks	2, 3, 4, 5, 6
9	Writing statistical consulting report.	1	0	2	Lecture/ Virtual Discussion Forum		5, 6
10	Statistical consultancy with clients	0	2	5	Discussion Forum **FA4: Client's project 2**	15% of Final Marks	2, 3, 4, 5, 6
11	Discussion of the analysis - FA2 and FA4	2	2	5	Lecture/ Discussion		5, 6
12	Statistical consultancy with clients	1	2	2	Lecture/ Discussion **FA5: Client's project 3**	10% of Final Marks	2, 3, 4, 5, 6

Topic No.	Topic/Sub Topic	No. of Hrs			Teaching Method	Assessment Criteria	ILO Alignment
		T	P	IL			
13	Discussion of the analysis - FA5	2	3	4	Lecture/ Discussion	3, 4, 5, 6	
14	Writing logbook/ Meeting with clients	1	2	3	Lecture/ Discussion		1, 6
15	A recapitulation/ ways to continue as a statistical consultant	1	2	3	Lecture **SA: Summative assessment**	30% of Final Marks	1
	Total	15	30	55			1, 2, 3, 4, 5, 6

Linking Program Outcomes with ILOs:

Program Outcomes: B.Sc. Honours degree

1. Demonstrate competency in theoretical knowledge and practical and/or technical skills in the respective field of specialization (statistics).

2. Communicate efficiently and effectively in the respective field of specialization using written, oral, visual and/or electronic forms.

3. Facilitate and participate as an empathetic and emotionally intelligent team player with leadership qualities, in a group, diverse team or organization.

4. Apply subject-specific knowledge and skills creatively to solve real-world problems by making context-specific operational decisions while adapting to changing environments.

5. Integrate creativity, innovation, and entrepreneurial and managerial proficiencies to build values.

6. Implement subject-based solutions in keeping with ethical, societal and environmental norms and need for sustainable development.

7. Secure life goals through lifelong learning with the aim of scholarly advancement and/or strengthening professional skills, and ensuring the betterment of the community.

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
ILO 1	***	**	***	***	***		***
ILO 2	***			***	*		
ILO 3	**			***	*		
ILO 4	***	***		***	*		*
ILO 5	***	***	**	**	***	***	**
ILO 6	***	***	***	**	***	***	***

*** - Strongly linked; ** - Medium linked; * - Weekly linked

Mode of Assessment:

Formative Assessment (FA): FA1 10% + FA2 20% + FA3 15% + FA4 15% + FA5 10% = 70% of total marks.

Summative Assessment (SA): Final individual presentation and log book = 30% of total marks.

References:

- Talagala, T. S. (2020). Statistical Consultancy Service, *Course website.* https://scs-fas-sjp.netlify.app/
- Wickham, H., & Grolemund, G. (2019). *R for data science: import, tidy, transform, visualize, and model data.* O'Reilly Media, Inc. https://r4ds.had.co.nz/
- Grolemund, G. (2014). *Hands-on programming with R: write your own functions and simulations.* O'Reilly Media, Inc. https://rstudio-education.github.io/hopr/
- Cabrera, J., & McDougall, A. (2002). *Statistical consulting.* Springer Science & Business Media.

Prepared by: Dr Thiyanga S. Talagala

email: ttalagala@sjp.ac.lk