

UNIVERSITI TEKNOLOGI MARA

**DIFFERENCES IN EJECTION
FRACTION VALUE USING
DIFFERENT MODEL AND VOLUME
METHOD**

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BSc

January 2026

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ACKNOWLEDGEMENT

Alhamdulillah, first and foremost, I would like to express my deepest gratitude to Allah SWT for His mercy and guidance throughout the completion of this Final Year Project. His blessings have granted me strength, patience, and perseverance during moments of difficulty and uncertainty.

I would like to extend my sincere appreciation and heartfelt thanks to my supervisor, Dr. Mohd Rivaie bin Mohd Ali, whose continuous guidance, helpful advice, and constructive feedback have been a constant source of motivation throughout this project. His patience, understanding, and dedication have greatly contributed to the successful completion of this research.

My sincere thanks also extended to Dr. Norhaslinda Zull Pakkal, the lecturer in charge of the Final Year Project. Her dedication and commitment in coordinating the course ensured that I remained on track and fulfilled all the required components of this research.

A special note of appreciation goes to Eriana Lim binti Muhammad Razwan Lim, for her companionship and moral support throughout this research. The shared effort, discussions, and encouragement made this challenging journey more manageable and rewarding.

My heartfelt gratitude goes to my family for their endless love, prayers, and sacrifices, which gave me the strength and determination to persevere throughout this journey.

Finally, I wish to express sincere appreciation to someone whose steady encouragement and presence provided comfort and strength during challenging times. Though subtle and unspoken, this support was deeply meaningful and played an important role in helping me remain focused and motivated throughout the completion of this research.

ABSTRACT

Ejection Fraction (EF) is a crucial measure of the heart's pumping efficiency and is typically estimated via echocardiography using only the Simpson's 1/3 Rule. The fixed subintervals used in echocardiogram machine create significant inconsistencies and impact the accuracy of cardiac assessment. This research addresses this by comparing five numerical formula that are used to calculate EF which is Bi-plane Ellipse, Single Plane Long-axis Ellipse, Simpson's 1/3 Rule, Simpson's 3/8 Rule and the Trapezoidal Rule. The objectives are to apply these five methods to two echocardiogram samples to calculate EF percentages and analyse the resulting differences. The methodology involves a numerical calculation phase using *Microsoft Excel* and *Maple* software to compute End-Diastolic and End-Systolic Volumes. The findings revealed significant variances across methods, allowing the analysis phase to determine the strongest and the most clinically reliable method that will result in the minimum error. This research will ultimately provide healthcare professionals with the necessary information to enhance the process of diagnosis in cardiac assessment.