



جامعة الإمارات العربية المتحدة
United Arab Emirates University

UAEU

**The College of Graduate Studies and the College of Science Cordially Invite
You to a**

Master Thesis Defense

Entitled

An accurate method for solving higher order differential equations based on the implicit hybrid method

by

Ahlam Mohammed S Almokhmari

Faculty Advisor

Prof. Muhammed I. Syam, Department of Mathematical Sciences
College of Science

Date & Venue

12:00 PM
Sunday, 28 October 2018
Room 035, F3 Building

Abstract

In this thesis, we present numerical techniques to solve higher order differential equations based on the implicit Hybrid method. In these methods, we use the collocation and interpolating methods. Then, we derive the main schemes and their block methods. We investigate some theoretical results such as order of the method, consistency, convergence, and region of absolute stability. All numerical results are computed using Mathematica.

Keywords: Differential equations, Order of the method, Collocation, Interpolating, Taylor Expansion, Region of absolute stability, Error, consistency, Zero stability, Convergence.