**Activity-based schedule (Kanban/User Story Mapping)**

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| Name: | **Muhammad Hamza Shahab, Syed Haider Abbas Naqvi** |
| Community & UN SDG(s): | **SaskTel network engineers and architects**  **UN SDG(s):**   * SDG#7: Affordable and clean energy * SDG#11: Sustainable cities and communities * SDG#12: Responsible consumption and production * SDG#13: Climate action |
| Date: | **February 8th 2025** |

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| **Project Name** | Eco-Resilient Networks: Smart Deployment for the Future | | |
| **Activity** | **Duration** | **Start Date** | **End Date** |
| **MVP 1: Simulation Environment Setup** |  |  |  |
| **Work Package 1.1: Development Environment Setup** |  |  |  |
| Install Python, Mininet, libraries, set up GitHub | 1 | 2025-02-10 | 2025-02-10 |
| **Work Package 1.2: Core Simulation Framework Implementation** |  |  |  |
| Define classes for Node, Link, VNF, and SFC | 2 | 2025-02-11 | 2025-02-12 |
| Implement basic network topology creation (fat-tree) | 2 | 2025-02-13 | 2025-02-14 |
| Implement SFC request generation | 2 | 2025-02-15 | 2025-02-16 |
| Implement basic VNF placement (random, for initial testing) | 1 | 2025-02-17 | 2025-02-17 |
| **Work Package 1.3: Data Input/Output Modules** |  |  |  |
| Create JSON schema for input files (network topology, SFC definitions) | 1 | 2025-02-18 | 2025-02-18 |
| Implement functions to read network topology and SFC definitions from JSON/CSV files | 2 | 2025-02-19 | 2025-02-20 |
| **Work Package 1.4: Visualization Module** |  |  |  |
| Implement basic network topology & VNF placement visualization | 3 | 2025-02-21 | 2025-02-23 |
| **Activity 2: Scrum #1 (Feb 24)** |  |  |  |
| Prepare slides, demo, and talking points for progress update. | 1 | 2025-02-23 | 2025-02-23 |
| Present progress to instructor and peers. | 1 | 2025-02-24 | 2025-02-24 |
| **MVP 2: Algorithm Implementation & Evaluation** |  |  |  |
| **Work Package 2.1: Embedding Policy Implementation** |  |  |  |
| Implement *Tradeoff-Aware* Embedding (TAE) policy | 3 | 2025-02-25 | 2025-02-27 |
| **Work Package 2.2: Redundancy Optimization Algorithm (PSO)** |  |  |  |
| Implement basic Particle Swarm Optimization (PSO) algorithm | 3 | 2025-02-28 | 2025-03-02 |
| Integrate PSO with TAE embedding policy | 2 | 2025-03-03 | 2025-03-04 |
| **Work Package 2.3: Performance Metric Calculation** |  |  |  |
| Implement availability, carbon footprint, and latency calculations | 3 | 2025-03-05 | 2025-03-07 |
| **Activity 3: Scrum #2 (Mar 10)** |  |  |  |
| Prepare slides, demo, and talking points. Focus on demonstrating VNF placement and optimization. | 2 | 2025-03-08 | 2025-03-09 |
| Present progress to instructor and peers. | 1 | 2025-03-10 | 2025-03-10 |
| **Work Package 2.4: Algorithm Comparison & Evaluation** |  |  |  |
| Implement Availability aware and Carbon aware Policies | 4 | 2025-03-11 | 2025-03-14 |
| Design experiment matrix, run simulations, analyze and compare results | 4 | 2025-03-15 | 2025-03-18 |
| **Work Package 2.5: Other Redundancy Optimization Algorithms** |  |  |  |
| Implement Simulated Annealing (SA) and Genetic Algorithm (GA) | 4 | 2025-03-19 | 2025-03-22 |
| **Activity 4: Scrum #3 (Mar 24)** |  |  |  |
| Prepare slides, demo, and talking points. Focus on comparing different policies/algorithms. | 1 | 2025-03-23 | 2025-03-23 |
| Present progress to instructor and peers. | 1 | 2025-03-24 | 2025-03-24 |
| **MVP 3: Documentation and Reporting (This will happen throughout the project lifecycle)** | |  |  |
| **Work Package 3.1: Code Documentation** |  |  |  |
| Document code using docstrings and comments | Ongoing | 2025-02-10 | 2025-04-05 |
| **Work Package 3.2: User Guide** |  |  |  |
| Write and finalize user guide | 3 | 2025-03-25 | 2025-03-27 |
| **Work Package 3.3: Research Paper** |  |  |  |
| Write introduction and methodology sections | 3 | 2025-02-20 | 2025-02-22 |
| Write background and literature review sections | 3 | 2025-03-06 | 2025-03-08 |
| Write results and discussion sections | 4 | 2025-03-19 | 2025-04-22 |
| Finalize and proofread research paper | 2 | 2025-04-02 | 2025-04-03 |
| **MVP 4: Delivery** |  |  |  |
| **Work Package 4.1: MVP Integration and Testing** |  |  |  |
| Integrate and test MVP components | 2 | 2025-04-04 | 2025-04-05 |
| Prepare and rehearse MVP demo | 1 | 2025-04-06 | 2025-04-06 |
| **Activity 5: Project Submission (Apr 7)** |  |  |  |
| Create slides, practice presentation, prepare for Q&A. | 2 | 2025-04-04 | 2025-04-05 |
| Final presentation, submit code, paper, and all required documents. | 1 | 2025-04-07 | 2025-04-07 |