# Game Design Document — NecroVault

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## 1. Game Overview

Genre: First-Person Shooter / Minimal Dungeon Crawler  
Engine: Unreal Engine 5  
Scope: Small prototype with 1–2 short levels  
Camera: First-person  
Art Assets: Mixamo models optional (lowest priority)  
Core Goal: Survive each room by managing resources, defeating enemies, and achieving high scores before reaching the vault’s exit.

## 2. Core Concept

The player is a lone soldier exploring the NecroVault — an underground facility consumed by the undead. Each room presents short, intense encounters that test accuracy and resource management. The objective is to clear rooms efficiently to earn points and bonuses while surviving waves of enemies.

## 3. Gameplay Loop

1. Enter a room.  
2. Engage enemies using limited ammo and flashlight.  
3. Collect pickups to sustain health and light.  
4. Earn points based on kills and time efficiency.  
5. Exit through door to progress to the next room or end screen.  
  
Win Condition: Reach the final room or highest score.  
Lose Condition: Player health reaches zero.

## 4. Core Features

• Basic FPS combat and exploration.  
• Score-based progression system rewarding accuracy and speed.  
• Light vs. Shadow mechanic for atmosphere (secondary feature).  
• Pickups for ammo, health, and flashlight charge.  
• Optional time trial mode for competitive replayability.  
• Optional puzzle mechanic — passcode door or secret room unlock.

## 5. Player Character

Name / Role: The Warden — a special forces soldier investigating the NecroVault.  
Model: “Swat Guy” from Mixamo (optional import).  
  
Abilities:  
- Move: Standard FPS movement.  
- Attack: Fire hitscan weapon.  
- Light Management: Flashlight toggle, drains power meter.  
- Interact: Pick up items, open doors, and enter codes.  
  
Stats:  
- Health: 100 HP  
- Speed: 600 units/sec  
- Flashlight Battery: 100% (drains over 30s of continuous use)  
  
Audio: Subtle breathing, footsteps, and radio static.

## 6. Enemies

Skeleton Zombie — Common melee enemy, moves toward player, stronger in darkness.  
Maw J Laygo — Stretch goal mini-boss, uses ranged projectiles and advanced pathfinding.

## 7. Pickups

• Health Pack — Restores 25 HP.  
• Ammo Crate — Refills 30% of ammo.  
• Mini Battery Pack — Restores 25% flashlight charge.  
• Mega Battery Pack — Restores 100% flashlight charge.  
  
Stretch Goal:  
• Key Card — Unlocks secret rooms or puzzle areas.

## 8. User Interface (UI)

HUD Elements:  
- Health bar (bottom left)  
- Ammo counter (bottom right)  
- Flashlight charge meter (under health)  
- Score counter (top left)  
- Timer (top center, optional)  
- Crosshair  
  
Menus:  
- Main Menu: Play / Settings / Quit  
- Pause Menu: Resume / Restart / Quit  
- End Screen: Displays total score, time, and accuracy.

## 9. Complex Mechanic — Score & Puzzle System

The main complex mechanic revolves around a Score and Time Trial system.  
  
Score System:  
- +100 points per enemy defeated.  
- +25 points per pickup collected.  
- +Bonus points based on remaining time in time trial mode.  
- Score displayed dynamically on HUD and summarized at game end.  
  
Optional Puzzle System:  
Certain rooms feature a passcode-locked door or console. Players must find a 3- or 4-digit code hidden within the environment (on walls or notes). Entering the correct code opens a door leading to bonus items or high-score rooms.

## 10. Level Design

Environments consist of modular box-shaped rooms connected by simple doors. Lighting differences and minimal props create tactical variety. The player progresses room by room, earning points and optionally uncovering hidden puzzle areas.  
  
Example Progression:  
Room 1 — Tutorial (enemy + battery pickup)  
Room 2 — Two enemies, introduces score system.  
Room 3 — Swarm encounter, optional time trial.  
Room 4 — Passcode puzzle leading to bonus score room.

## 11. Audio / Visual Style

Sound: Reverb-heavy ambience and muffled undead growls.  
Music: Subtle drones rising with combat intensity.  
Lighting: Predominantly dark with flashlight and occasional flickering lights.  
Post-process: Light flicker, slight chromatic distortion when health or battery is low.

## 12. Stretch Features

• Leaderboard persistence using Game Instance or SaveGame system.  
• Procedural room layout or randomized enemy spawns.  
• Advanced puzzle variation (multi-room sequence or symbol matching).

## 13. Technical Notes

Player Pawn: Unreal FPS template.  
AI: Behavior Tree + NavMesh.  
Score System: Integer variable updated per event, displayed on HUD.  
Timer: Level Blueprint variable with countdown logic.  
Puzzle System: Blueprint keypad trigger + code verification.  
Battery System: Float variable decreases over time.  
Game Mode: Manages score, timer, and end conditions.