

French National School of Video Games and Digital Interactive Media

Course Content

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Students on the JMIN Master's degree programme receive specialised training which is meant to complement a bachelor's degree or previous knowledge from professional practice.

It is targeted at students who already have a high level of knowledge in one of the main professions part of the video game or digital audiovisual development process.

Below is an overview of the content of the 4 semesters.

<p style="text-align: center;">Semester 1</p> <p>Common Core of modules <u>in French</u> to form a solid basics of knowledge of the 6 tracks. The pedagogical goal is for students to better understand the constraints in the different jobs involved in the process.</p>	<p style="text-align: center;">Semester 2</p> <p>Classes <u>in French</u> specific to each track (2 modules for each track), as well as designing an Interactive Experience Mini-Project (more information can be found in the box opposite).</p>
<p style="text-align: center;">Semester 2</p> <p>More in-depth modules conducted <u>in English</u> devoted to each track, as well as the Video Game Development Project centred around the creation of a 'Vertical Slice' (more information can be found in the box opposite).</p>	<p style="text-align: center;">Semester 4</p> <p>Finish the Video Game Development Projects and complete an internship between 4 and 6 months in either a company or a research laboratory.</p>

Information about the 6 Tracks

Game Design

Game Designer

A Game Designer determines the concept of the game, ensuring the coherence of its different elements and above all, guaranteeing its playability.

In the proposal phase, they brainstorm with the publisher and the different heads of each area of activity to create a document (often called the 'pitch') which explains the objective of the game. The pitch identifies the target audience (from a hardcore teen gamer to someone who plays from time to time...), the game type (FPS or simulation...), the platform (PC, PS3...), original game elements and above all, addresses the vital question: why will it sell?

If the project enters the pre-production stage, the Game Designer defines every element of the game: the world, map, storyline, objects, characters and most importantly, gameplay. In fact, a Game Designer's obsession is whether the player will have fun: what games does the player enjoy playing and what makes them want to continue playing? Each profession has a part to play in the process, and the Game Designer is there to make sure each individual contribution fits with the rest.

In the production phase, the Game Designer steers and co-ordinates the activities of all the creative staff (Level Designers, Graphic Designers and Sound Designers). Under the Project Manager's authority, they help manage the production process. For more complex projects, the Game Designer can be assisted by specialists, for example in charge of dialogue or directing.

Game Designers must be aware of every aspect in game development, as well as of the technical constraints that will shape their choices. In general, you do not start working in the video game industry as a Game Designer, but rather in another profession, often as a Level Designer. After you have proved your inventiveness, you may get a shot at your dream job. Shigeru Miyamoto, the creator of 'Mario', originally trained as a Graphic Designer; Sid Meier, famous for 'Pirates' and 'Civilization', started out as a Game Programmer.

Level Designer

The Level Designer oversees creating each stage/level in the game and its scenario. Unlike a film scriptwriter, the Level Designer's narrative is not temporal, but in an environment. They have a 2D or 3D map of each level, with the objects/characters that have been identified during the design phase. The Level Designer must place these objects on the map in accordance with the gameplay. They determine which path the player's avatar can follow and the various quests that need to be accomplished to finish the level. The key to level design is to construct a progressive degree of difficulty. The Level Designer must find the right balance so as not to discourage the player, but to make them feel they are accomplishing things in an adventure in which they are the heroes.

For example, the Level Designer could start by placing a terrifying monster (the boss) that must be beaten to finish the level. The corridor leading to the boss is behind a locked door. You need to find the key, which is well-hidden and well-protected of course. If you want to stand a chance of defeating the monster, you'll need a magic sword and a healing potion. The potion can only be obtained if you have enough gold, but that's no problem, as to earn gold, you just have to kill lots of less powerful monsters dotted around the level.

Of course, the player doesn't know which way to go. Finding one's way and solving the puzzles encountered en route is what makes a game entertaining, but as the level needs to be finished within a reasonable time limit, the designer can provide a sort of breadcrumb trail to keep the player on the right track. NPCs can provide information, or visual, textual and audio clues give tips about how to solve the quest and obtain objects you will need later in the level/game.

The Level Designer is in permanent contact with the rest of the team. The Game Designer sets out the guidelines, the Graphic Designer and the Sound Designer render the objects the Level Designer works with, and finally the programmers code the behaviour of each object. The Game Designer also provides an essential level design tool: the scripting language. It is this simple and game-related computer programming language that enables the Level Designer to code their scenario: "When the player enters the dungeon, all the monsters attack".

The Level Designer's basic tool is the level editor designed by the programmers. Many games (Half Life, Neverwinter Nights, Oblivion...) make their level editor freely available, so that a new episode or even a completely different game can be created.

Project Management

Project Managers

Project Managers ensure that the project runs smoothly, both in terms of deadlines and budget. They ensure that the members of the team have the necessary means at their disposal to reach its objectives.

They are also managers in charge of making sure the team stays on schedule and must communicate with all members and sort out any people problems. Moreover, they are on the front line when it comes to communicating with publishers and manufacturers.

Project Managers need to be very organised and understand each step of the video game development process.

The publishers, who produce, finance and commercialise a game, bring together several major sectors of activity in their organisations.

4 Central Activities

Professions in game publishing can be grouped into 4 central activities, each of which comprises different functions and roles.

Marketing includes product and community managers.

Admin and finance oversee all legal and accounting aspects.

Production includes producers (who track each project), game testers, localisers and not forgetting webmasters.

Sales comprises the sales, distribution and business development teams. The latter work to develop new prospects for the company.

The professions haven't really changed much over the last ten years, but they are currently evolving very fast as digital distribution transforms the market.

Source: French National Video Game Confederation's Job Description Reference File (SNJV) - 1st edition, October 2012

Game Art

A game's visual identity is a key element to its success. Jobs can be more or less specialised depending on the type and scale of the project in question, but there are always three main types of professionals working on graphic design, modelling and animation.

Graphic Designers

Graphic Designers intervene from the pre-production phase to the designing of the characters and the environment. This task often relies on classic drawing skills and provides a better idea of the game's imaginary world.

Modellers

Modelling involves transforming a 'drawn' object (characters, buildings, weapons...) into a computer-based graphic element which can be integrated into the game. This work exists in 2D games but is particularly well-developed in 3D games where modellers must create nothing less than a 'digital sculpture' that represents the object as seen from every angle.

Animators

Animation in a game is the art of imagining the character's movement, as well as that of all other mobile objects and elements. Animation is therefore a very specific field of graphic design which requires the combined skills of a visual artist and a film director together with a keen awareness for movement.

Art Directors

The Art Director defines and guides the aesthetic orientation of a game or interactive experience. They co-ordinate the work of a team made up of Graphic Designers, Modellers and Animators, making sure they work in harmony and compliance with the general artistic direction laid out in the game's specifications.

Sound Design

Sound Designer

Just like in a film, a video game soundtrack is made up of voices, sound effects and music and just like at the cinema, sound plays a key role in creating drama and immersing the player (spectator) in the heart of the action. A film's soundtrack is designed around the story and its timeline: everything is managed using time code. In a game, audio depends on the unexpected events that the player encounters.

Sound Designers are like architects who build an audio environment. Together with the Lead Game Designer and the Lead Artist, they define the game's atmosphere in terms of sound: the type of music,

dialogues, sound effects (realistic or not) and how the atmosphere changes as the player progresses through the game. They may also suggest gameplay elements: sounds connected to puzzles, warning sounds for danger or helping players to easily situate themselves in the game world...

During the production phase, Sound Designers create (or buy) sounds: recording dialogue, imagining sound effects, choosing music, etc. These elements will then be transformed, and, with the help of Game Programmers, the Sound Designer integrates the sounds into the game. In a large-scale production, there may be a composer and musicians, but Sound Designers often work alone. Just like in the film industry, they often have to integrate audio with an extremely tight deadline, once almost everyone else has finished.

Sound Designers work with digital audio editing software (Protools, Soundforge...), professional synthesisers, audio synthesis programming languages and the sound engine, which allows real-time treatment of game audio (eg: ISACT or XACT on PC and Xbox 360).

UX/UR (User eXperience/User Research)

The Ergonomist – a User Interface Designer

Video games provide the means for a person (i.e. the player) to interact with a system for leisure or entertainment, or in the case of serious games, to acquire knowledge and skills.

A video game can be compared to a virtual interactive environment; however, certain subjective aspects such as player commitment, immersion and pleasure are particularly important in designing games that are both user-friendly and fun. For video games, ergonomics is based on:

Traditional methods and concepts

These methods and concepts originate in the fields of cognitive ergonomics and human-machine interface design.

Usability, utility, acceptability and user experience.

As well as: focus groups, comparative studies, user tests, modelling, activity analysis, expert analysis, evaluation grids, etc.

Industry-specific concepts

Level of difficulty, playability, player types...

Game Programming

Programmers

Using a specific language, Programmers write (develop) code that enables the computer or the console to run the game and to create images and sounds in accordance with the player's actions. There are three levels of programming in a video game. The Level Designer codes the scenario. Then, object and character behaviour is coded by the Gameplay Programmer. Finally, functionality with the computer/console's structure and OS is the work of the Engine Programmer.

Engine Programmers

Engine Programmers develop or adapt functionalities that make it possible to recreate every aspect of behaviour, as well as render graphics and sound in real time. They supply different versions of these functions so that the game can be played on different platforms (consoles, PC...). The Lead Programmer is in charge of overall programming and is assisted by Programmers who specialise in one of the 5 engines that correspond to basic game functions: graphics rendering, sound, physics, network and AI.

As we mentioned previously, Game Programmers either use existing engines (commercially available or open source) or engines developed in-house. Engine Programmers base their work on the PC/console functionalities provided by the manufacturer. Most games are developed in C++, except games on phones which are often programmed in Java.

Gameplay Programmers

Gameplay Programmers develop the interactive behaviour of all the objects in the game. For example, they create a programme that activates the animation and corresponding sound effects when a player uses a weapon. Another classic example, with AI this time, is programming the route that a character or group of characters has to take to go from A to B (pathfinding). Gameplay Programmers also develop a simple programming interface (a scripting language) which allows the Level Designer to code the storyline. These tasks rely on the game engine's basic functions.

Detailed Information about the JMIN Master's projects

First-Year Mini-project

The Mini-project is the perfect opportunity for students to give free reign to their imagination and creativity!

It is the result of teamwork project with at least 3 students working together over a 4-month period. It must lead to an interactive, finished and tangible product that is not too complex from a technical standpoint.

The player must be able to understand how to play in less than 10 minutes without the help of any written or oral instructions.

Students will present their project at the end of the year to a jury of industry professionals and members of the teaching staff.

Second-Year Project

The Second-Year Multi-disciplinary Video Game Development Project corresponds to the pre-production of games in the industry sense of the term. Students must design, test and document the process, before convincing industry professionals of the originality, interest and feasibility of their game project.

Students create teams around five projects. Each of the 5 teams must include a Project Manager, 2 Game Designers, 2 Graphic Artists, a Sound designer, 2 Game Programmers and an Ergonomist. The total time allowed for production is around 5 months.

Three oral defence presentations are delivered (December, February and March) to a jury made up of industry professionals and members of the teaching staff.

