Emmanuel J Rodriguez
Résumé

Location: West Texas
emmanueljrodriguez.com/contact/
emmanueljrodriguez.com/contact/
linkedin.com/in/emmanueljrodriguez
github.com/mannyjrod
grabcad.com/manny.rodriguez-3

LIFE PHILOSOPHY & PROFILE

"Push the envelope."

I am currently an adjunct professor at National University's Department of Engineering and Computing, where I teach undergraduate engineering courses. Prior to teaching, I spent five years at Raytheon Missile Systems where I was lead additive manufacturing (AM) engineer.

My passion lies in design, analysis, manufacturing, and test of flight vehicles. I hold a BS and MS in Mechanical Engineering from The University of Texas at El Paso, and an FAA private pilot's license.

PROFESSIONAL EXPERIENCE

Adjunct Professor
📅 June 2018 – Present

National University 📍 San Diego, CA

Promotions: from Adjunct Faculty to Core Adjunct Faculty, June 2020

- Equip and mentor students with the required skill-set to be successful professionals in the engineering profession, facilitate classroom discussions, and assess student performance.
- Active member of the BS in Manufacturing Design Engineering Five-Year Review Committee; the committee's objectives include program refinement to meet industry needs and ABET accreditation readiness preparation.

Manufacturing Engineer
📅 June 2013 – June 2018

Raytheon Missile Systems 📍 Tucson, AZ

Last performance evaluation: Far exceeds
Promotions: from E2 to E3, December 2014; from E3 to E4, June 2017

- Developed quality control procedures and optimal processing conditions to fabricate metallic airframe structures using novel AM technology for use in hypersonic flight vehicle test units.
- Led the design of experiments (DOE) effort to screen and characterize metals AM laser-directed energy deposition process factors.
- Collaborated with a cross-functional team to perform material characterization of AM nickel-based alloys to generate an internal design-allowables database.

Adjunct Lecturer
📅 August 2015 – May 2016

Pima Community College 📍 Tucson, AZ

- Mentored first year college students, and prepared them for a college career in the engineering curriculum.
- Lectured undergraduate problem solving and engineering design; the course was hands-on, in which various apparatuses were built, from catapults to windmills, with the goal of introducing a pragmatic approach to engineering design, manufacturing, test, and analysis.

EDUCATION

2011 – 2013	**Master of Science** Mechanical Engineering The University of Texas at El Paso
THESIS	*Development Of A Thermal Imaging Feedback Control System In Electron Beam Melting*
2005 – 2010	**Bachelor of Science** Mechanical Engineering The University of Texas at El Paso

TECHNICAL SKILLS

PROFICIENT	Mechanical Design – CAD: SolidWorks · Siemens NX · PTC Creo · Geometric Dimensioning & Tolerancing Structural Analysis – FEA: NX Nastran · ANSYS Mechanical Manufacturing: Additive Mfg. (polymers and metals) Quality Control & Design of Experiments: MATLAB Statistics · JMP – Data Analysis
INTERMEDIATE	Computational Fluid Dynamics (CFD): ANSYS Fluent Predictive Analytics: Python · MATLAB Machine Learning Systems Simulation and Programming: MATLAB Simulink · Visual Basic · Pine Script
BEGINNER	Typesetting system: LaTeX

SOFT SKILLS

STRONG	Grit · Emotional Intelligence · Empathy · Interpersonal Relationships · Mentoring · Active Listening · Resourcefulness · Compassion

LANGUAGES

English ●●●●●
Spanish ●●●●○
Portuguese ●●○○○

ENTREPRENEURIAL EXPERIENCE

Freelance Engineer
📅 August 2020 – Present
Upwork
📍 Remote
Upwork Profile: upwork.com/fl/emmanueljrodriguez

- Design mechanical parts and assemblies based upon customer requirements while providing technical design direction.
- Code general-purpose MATLAB programs using numerical methods.

Stock-Options Trader
📅 July 2015 – Present
Self-Employed
📍 Remote

- Analyze stock market data to develop trading systems.
- Code trading strategies to back-test trading strategies.
- Execute buy/sell transactions based upon researched traditional and experimental forms of technical stock performance analysis.
- Journal and track all trades to facilitate a continuous evaluation of trading strategy results to improve system performance.

TEACHING EXPERIENCE SUMMARY

Undergraduate Courses Taught:

Course	Term	Class Size	Rating*
CAD – Intro. SolidWorks[1]	April 2021	6	-
CAD – AutoCAD[1]	March 2021	12	-
Concurrent Design Engineering[1]	January 2021	4	4.80
Human Factors in Eng.[1] [†]	December 2020	5	4.85
Design & Analysis of Exp.[1]	October 2020	7	4.95
Engineering Math.[1]	August 2020	17	3.52
CAE – Intro. MATLAB[1]	May 2020	7	4.82
CAD – Intro. SolidWorks[1]	April 2020	7	4.71
CAD – AutoCAD[1]	March 2020	17	4.72
Human Factors in Eng.[1]	December 2019	7	4.32
Statics & Strength of Materials[1]	September 2019	15	4.26
CAD – Adv. SolidWorks[1]	June 2019	7	4.80
Design & Analysis of Exp.[1]	March 2019	6	4.90
Design & Analysis of Exp.[1]	October 2018	10	4.79
CAD – Adv. SolidWorks[1]	June 2018	13	3.88
Prob. Solving & Eng. Design[2]	Spring 2016	17	-
Prob. Solving & Eng. Design[2]	Fall 2015	23	-

[1] *National University, San Diego, CA*   [2] *Pima Community College, Tucson, AZ*
* Overall rating of instructor, 5 = Highest   [†] Significant course redesign

PROFESSIONAL SERVICE

Club Secretary
📅 August 2020 – Present
Improv Masters
📍 San Diego, CA
A Toastmasters Intl. Club
Focus: Professional development – communication and leadership

---

Mentor / Tutor
📅 October 2019 – September 2020
San Diego Youth Services
📍 Vista, CA
Adoptions Support Services
Mentored to a 12-year old aspiring robotics engineer; projects we worked on included paper airplane construction and flight testing, and robotics programming (Basic Stamp microcontroller with editor).

CLEARANCES & CERTIFICATIONS

SECRET Security Clearance

ISSUING ORGANIZATION	The United States Government U.S. Office of Personnel Mgmt.
REINVESTIGATION	May 2018 (valid for 10 years)
DEBRIEF	July 10th, 2019
STATUS	Inactive; reinvestigation not required if sponsored by July 2021.

✈ **Private Pilot**
Certificate

ISSUING ORGANIZATION	Federal Aviation Administration
DATE OF ISSUE	October 2017
RATINGS	Airplane single engine land Instrument rating *in progress*
TOTAL FLIGHT TIME	198 hours

6σ **Lean Six-Sigma Specialist**

ISSUING ORGANIZATION	Raytheon Missile Systems
DATE OF ISSUE	June 2015
LEVEL	Green belt
FOCUS	The DMAIC improvement cycle applied to manufacturing.

PUBLICATIONS

📄 Journal Articles

[1] E. Rodriguez et al. "Approximation of absolute surface temperature measurements of powder bed fusion additive manufacturing technology using in situ infrared thermography". In: Additive Manuf. 5 (January 2015), pp. 31–39. DOI: 10.1016/j.addma.2014.12.001.

[2] P. Frigola et al. "Fabricating Copper Components with Electron Beam Melting". In: ASM Int. – Adv. Mater. Proce. (July 2014), pp. 20–24. URL: https://www.asminternational.org/documents/10192/19735983/amp17207p20.pdf.

[3] C.A. Terrazas et al. "Multi-material metallic structure fabrication using electron beam melting". In: Int. J. Adv. Manuf. Technol. 71 (March 2014), pp. 33–45. DOI: 10.1007/s00170-013-5449-0.

[4] E. Martinez et al. "Microstructure of Niobium Components Fabricated by Electron Beam Melting". In: Metallogr. Microstruct. Anal. 2 (June 2013), pp. 183–189. DOI: 10.1007/s13632-013-0073-9.

👥 Conference Proceedings

[5] E. Rodriguez et al. "Integration of a Thermal Imaging Feedback Control System in Electron Beam Melting". In: Proceed. 23rd Annual Solid Free. Fabric. Symp. The University of Texas at Austin, Austin, TX, USA, 6-8 August, 2012, pp. 945–961. URL: http://utw10945.utweb.utexas.edu/Manuscripts/2012/2012-72-Rodriguez.pdf.

Emmanuel J Rodriguez, MSME