

Topics for internships in Brazil – Living Lab Biobased Brazil (updated 30 - 05 - 22)

Topic for internship	Professor in BR	University	Professor in the NL	University	Extra info & Example projects
Biofuel	Fábio de Ávila Rodrigues Marcio Aredes Martins Ronaldo Perez	UFV			<ul style="list-style-type: none"> ● Simulation and optimization of biorefineries, mainly related to the production of biofuels (e.g., bioethanol, biodiesel, levulinic acid with professors Fábio/Marcio and technical and economic viability, competitiveness, industrial layout, legislation and investments with professor Ronaldo) ● Examples of previous internships: <ul style="list-style-type: none"> ○ Energy use of biogas from landfill effluent - Aspen modelling (Fabio / Lex Verheem, 2) ○ Aspen modeling of biodiesel production via oil esterification (Fabio/ Joost Endepoel, 4) ○ Charcoal cooling in large rectangular furnace: modeling and CFD simulation (Marcio / Rob Hageman, 30)
	Isabel Cristina Pereira Fortes Vânia Marcia Duarte Pasa	UFMG	Rene Kleijntjes Qian Zhou	Avans Avans	<ul style="list-style-type: none"> ● Production and testing of biodiesel ● Heterogeneous catalysis for the valorisation of fossil-based hydrocarbon streams (can be residual or crude oil) ● Pyrolysis ● Examples of previous internships: <ul style="list-style-type: none"> ○ Laboratory scale biodiesel production from waste cooking oil by heterogeneous catalysis or enzymatic catalysis (Robin van Schendel) ○ Biodiesel synthesis from catalytic route using alternative catalysts (Ieva Liobyte) ○ Production and characterisation of biocomposites from macauba residue (Hugo Mermet) ○ Biobased polyurethane coatings synthesized from biomass residue (Rick van Eijk, 37) ○ Determination of kinetic model parameters for biodiesel production using heterogeneous catalysts (Rosemarie de ruijter, 21)
	Laura Hamdan de Andrade	PUCminas			<ul style="list-style-type: none"> ● Improvement of biodiesel production ● Examples of previous internships: <ul style="list-style-type: none"> ○ Purification of glycerin derivatives from biodiesel production by adsorption and ion exchange (Tautvydas Kireilis, 10, 39) ○ Reuse of residual cooking oil as raw material for biodiesel production (Enrique Smolders, 11) ○ Production of biodiesel from bovine tallow (Rick Boogaard, 38)
Biogas	André Pereira Rosa	UFV		Avans	<ul style="list-style-type: none"> ● Diagnosis and optimization of biogas production from industrial, municipal, and agricultural effluents (e.g., effluent treatment and use of by-products, anaerobic digestion, monitoring of decentralized domestic sewage systems) ● See example assignment descriptions
	Sérgio Francisco de Aquino	UFOP			<ul style="list-style-type: none"> ● Hydrolysis of lignocellulosic waste for biogas production and/or recovery of by-products; Analysis and removal of micropollutants present in wastewater and drinking water, in particular pharmaceuticals, pesticides and cyanotoxins. ● Examples of previous internships: <ul style="list-style-type: none"> ○ Anaerobic digestion of residues/effluents for energy and added value products recovery, (Cindy Giel, 55)> Open: August '22, March '23 ○ post treatment of effluent from anaerobic biogas reactors treating vinasse and hemicellulose (Arturo Diego Sanchez)

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Biogas	Gabriel Pereira	UFSJ			<ul style="list-style-type: none"> ● Improving the injection of trace gases and aerosols on emissions numerical models in South America.
Biorefinery	Jorge Luiz Colodette	UFV			<ul style="list-style-type: none"> ● Biorefinery of hemicellulose ● Examples of previous internships: <ul style="list-style-type: none"> ○ Production of tissue, printing and writing, folding carton and board paper of much superior qualities (strength) than those currently produced with hardwood and grass fibers (Jennifer Bannink, 17)
	Boutros Sarrouh	UFSJ			<ul style="list-style-type: none"> ● Projects involving production of hydrolytic enzymes from isolated microorganisms as well as the fractionation of lignocellulosic residues for production of bio-products of industrial interest by fermentative processes. ● Examples of previous internships: <ul style="list-style-type: none"> ○ Production of enzymes from isolated microorganisms aiming to enzymatic treatment and fermentation of biomass residues for the production of bio-products of industrial interest (Ruben Bond, 43) ○ Chemical and enzymatic treatment of lignocellulosic residues for the production of bio-products of industrial by interest by fermentation processes (48, 51)
Biorefinery - ASPEN modelling	Fábio de Ávila Rodrigues	UFV			<ul style="list-style-type: none"> ● Examples of previous internships: <ul style="list-style-type: none"> ○ Aspen modeling of furfural and hydroxymethyl furfural (HMF) production via dehydration of pentoses and hexoses (Fabio / Matthijs Muilwijk, 3) ○ Simulation and economic evaluation of 5-hydroxymethylfurfural (HMF) and furfural production from biomass (Fabio / Jesse Huebben, 45) ○ Simulation and economic evaluation of levulinic acid production from biomass (52)
Wastewater treatment	Ann Honor Munteer	UFV		Avans	<ul style="list-style-type: none"> ● Combination of physical, chemical and biological processes for improved wastewater treatment and management (e.g. reuse of waste and effluents, decentralized sewage systems, environmental quality, advanced wastewater treatment, ecotoxicology). ● See example assignment descriptions: <ul style="list-style-type: none"> ○ Removal of bioactive substances during wastewater treatment (Joris Mallens, 40)
	Laura Hamdan de Andrade	PUCminas			<ul style="list-style-type: none"> ● Treatment of effluent using membrane distillation. ● Wastewater treatment; water reuse; membrane separation process; membrane distillation; physicochemical analysis. ● Examples of previous internships: <ul style="list-style-type: none"> ○ Electrodialysis for gold mining wastewater treatment (Joost Endepoel, 18) ○ Nanofiltration and advanced oxidation process for textile wastewater treatment (35, 41)

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	César Rossas Mota Filho	UFMG			<ul style="list-style-type: none"> ● Reuse of organic waste and treatment of wastewater. It can be municipal wastewater but for instance, also wastewater from festival toilets. ● Pilot plant that turns organic food residues from university into biogas. The system also involves an UASB-reactor + Anamox ● Examples of previous internships: <ul style="list-style-type: none"> ○ Characterise (measure flow rates, as well as COD, BOD, P, N, NH₃, DO, etc) the liquid effluent from the food waste methanisation platform in operation at UFMG campus and provide a preliminary design for the Nitrogen removal pilot-scale systems that will be implemented (Paul Hankinson) ○ Determine the effects of liquid deodorants (those used in chemical toilets) on biological wastewater treatment using anaerobic and/or aerobic processes (Lennard Visser) ○ Investigate the toxic effects of the waste of chemical toilets on the bacterial processes in sewage treatment plants and see if there are possible environmentally friendly alternatives (Niels de Koster, 20) ○ What is the cheapest and most effective way to remove and collect microalgae from water treated in sewage treatment plants? (Sophie Lurquin, 19)
	Camila Costa de Amorim	UFMG			<ul style="list-style-type: none"> ● Removal of contaminants from different residues (from the dye industry and mining industry) using chemical oxidation. ● Examples of previous internships: <ul style="list-style-type: none"> ○ Life cycle assessment (LCA) of different oxidation processes applied on the treatment of water and wastewater (29)
	Sônia Rocha	UFMG			<ul style="list-style-type: none"> ● Removal of strontium by precipitation with carbon dioxide (42)
Reuse of residual streams	Claudio Mudado Silva	UFV		Avans	<ul style="list-style-type: none"> ● Combination of physical, chemical and biological processes for reuse or recycle of residual streams (e.g., industrial wastewater reuse, industrial waste recycling) ● See example assignment description: <ul style="list-style-type: none"> ○ Thermophilic treatment of pulp mill effluent using granular sludge (Lynn Joostens, 8) ○ Respirometric tests for prediction of toxic effects in the effluent treatment plant and drainages optimization during maintenance shutdowns on pulp and paper mills (Brian Barbieri, 9) ○ Improvement of the anaerobic digestion process of biosludge from paper & pulp industry (Lara Lobotic, 46) ○ Alternatives of energetic recovery of organic residues in pulp and paper plants according to biorefinery concept (Alessio belmondo, 6)
	Raphael Tobias de Vasconcelos Barros	UFMG	Jappe de Best Maurits Dorlandt	Avans	<ul style="list-style-type: none"> ● Re-use of industrial and municipal solid waste (e.g., re-use of construction and demolition waste, e-waste, composting of organic waste) ● See example assignment description: <ul style="list-style-type: none"> ○ Possibilities for the re-use of construction waste (Hugh Rhodes, 1B) ○ Possibilities for the re-use of E-waste (Peter Huaman, 1A)

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					<ul style="list-style-type: none"> ○ Possibilities for the improvement of composting of household waste in Minas Gerais (Jens Vloedgraven, 24) ○ Improvement of collecting, separating and re-using organic domestic waste (Max Post, 32, 47)
	Marcio Aredes Martins	UFV	Michiel Michels	Avans	<ul style="list-style-type: none"> ● Growth of microalgae on residue streams (wastewater). Research on the purification of crude microalgae oil for biodiesel and food production. ● Examples of previous internships: <ul style="list-style-type: none"> ○ Microalgae harvesting technologies for increasing oil productivity (Marcio / Michael Boot, 31)
	Marcelo S. Batista	UFSJ			<ul style="list-style-type: none"> ● Examples of previous internships: <ul style="list-style-type: none"> ○ Biomass use for obtaining carboxylic acid (Robin Taks, 50)
Food Technology	Frederico Barros	UFV			<ul style="list-style-type: none"> ● Bioactive compounds in foods: extraction, quantification and antioxidant properties. Laboratory work; food natural colorants; anthocyanins; solvent extraction; ultrasound; antioxidant capacity. ● Improving food quality and human health through grain chemistry and technology. Laboratory work; dietary fiber; resistant starch; tannins; bioactive compounds; food processing
	Orlando David Henrique dos Santos	UFOP			<ul style="list-style-type: none"> ● Evaluation of the potential of plant extracts as an environmentally friendly product for food and pharmaceutical applications. undergraduate program for: Pharmacy, Biotechnology, Chemistry or related. Per March '23
Environmental Impact Assessment (EIA)	Camila Costa de Amorim	UFMG	Jappe de Best Ilse Rovers	Avans	<ul style="list-style-type: none"> ● Study at procedures for EIA dairy industry, wind energy and biogas production in Brazil and NL ● Examples of previous internships: <ul style="list-style-type: none"> ○ Compare and contrast EIA procedures and requirements for dairy industries, wind energy facilities and biogas generation for energy production in Minas Gerais and The Netherlands (28)
	Matheus Porto	UFMG	Jappe de Best		<ul style="list-style-type: none"> ● Environmental impact assessment (EIA). ● Experimental evaluation of Methane emissions in open burners (or other combustion processes) to the atmosphere using multispectral thermography. ● Ecology: thermal-acoustic technology to study biodiversity.
Building and Construction	Guilherme Jorge Brigolini Silva	UFOP		Avans	<ul style="list-style-type: none"> ● Use of industrial waste for sustainable building materials (e.g., material analysis for social housing, reuse of iron ore tailings from dams, alkali activated cements produced from biomass): Open August '22 ● <i>Not recommended if you have dust allergy.</i> ● For more information, please look at https://reciclos.ufop.br/
Nano-materials and biomaterials	Herman Sander Mansur	UFMG			<ul style="list-style-type: none"> ● Works mainly with nanomaterials and biomaterials. For instance, for medical purposes & environmental engineering ● Looks for links between industries. Waste of one company can be a resource for another company.

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	Jhonattan Cordoba	UFMG			<ul style="list-style-type: none"> ● Nanomaterials and biomaterials ● Nanodevices for health purposes and improvement in food quality. ● Implementation of biomaterials in obtaining optical and phononic devices for the next generation of communication systems.
	Rodrigo Lambert Oréfice	UFMG			<ul style="list-style-type: none"> ● Biobased hydrogels containing biobased derived nanoparticles: these hydrogels can flow under stress due to a supramolecular architecture and physically promoted crosslinks: chitosan, collagen and cellulose derivatives can be used together with carbon derivatives, cellulose or chitin nanocrystals. Intended applications include cosmetics, sprayable adhesives and other active molecules. ● Preparation of electrospun nanofibers from recycled polymers, as PET to yield bactericidal and viricidal materials.
Entrepreneurship and Innovation	Adriana Ferreira de Faria	UFV			<ul style="list-style-type: none"> ● Research on innovation environments in Minas Gerais (e.g., startups on biotechnology, business management, incubators, technology parks) ● Support to the development of new technology-based companies and startups in the Technology Park of Viçosa (tecnoPARQ)
Geosciences Ecosystem services	Sónia Maria Carvalho Ribeiro Rodrigo Affonso de Albuquerque Nóbrego	UFMG	Mart Verwijmeren Ilse Rovers	Avans	<ul style="list-style-type: none"> ● The look at economic and environmental value of nature reserves and effect of environmental disasters on these values (for instance mining industry) ● The group works a lot with GIS and programme that was developed by the department. ● Landscape Ecology (participatory approaches to land management, landscape management) ● Forest Science (Mapping Ecosystem Services from the forest). ● Geosciences (geospatial analysis). ● Use of biodiversity in Brazil. ● Examples of previous internships: <ul style="list-style-type: none"> ○ From environmental disaster to sustainable socio-biodiverse futures: technical innovations for sustainable land use management in the buffer area of Rio Doce State Park, Brazil (Ivo Verhaar, 44)
Biopolymers & biomolecules	Rodrigo Lambert Oréfice	UFMG			<ul style="list-style-type: none"> ● High entropy polymer blends from recycled polymers: preparation of blends using a series of recycled polymers and a high-pressure torsion process that can produce ultrafine-grained materials. ● Surface modification of polymers to allow harvesting atmospheric moisture for irrigation in dry places of the northeastern part of the State of Minas Gerais. ● Development of multi-scale porous polymer systems for removal of pesticides during water treatment.
	Renata Costa Silva Araújo Daniel Bastos de Rezende	UFMG/LEC			<ul style="list-style-type: none"> ● Research on waste pyrolysis, from which it is possible to obtain fuel fractions that can be studied. ● Development of polyurethane coating synthesis and analysis to finding application for coatings. ● Examples of previous internships: <ul style="list-style-type: none"> ○ Biobased polyurethane coatings synthesized from biomass residue (Rick van Eijk, 37) ○ Improvement and study of biopolyurethane coatings based on Macauba (53)
	Frederico Barros	UFV			<ul style="list-style-type: none"> ● Extraction and quantification of bioactive compounds from fruits (54)

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Ecology	Yasmine Antonini	UFOP	Mart Verwijmeren		<ul style="list-style-type: none"> ● Restoration of forests using animals as ecological tools to improve process of colonization and ecological succession (57) ● Plant pollinator interactions in high mountains of Quadrilátero Ferrífero, Minas Gerais. Open: August '22, March '23.
Solar energy	Marco Antonio Schiavon	UFSJ			<ul style="list-style-type: none"> ● Quantum dots solar cells (49) ● Nanomaterials for Energy Conversion: Innovative Solar Cells
Environment & transport	Rodrigo Affonso Nóbrega	UFMG			<ul style="list-style-type: none"> ● Environment and transport