التعليم العالي والبحث العلمي
جهاز الإشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي
قسم الاعتماد

دليل وصف البرنامج الأكاديمي والمقرر الدراسى

2024

المقدمة:

يُعد البرنامج التعليمي بمثابة حزمة منسقة ومنظمة من المقررات الدراسية التي تشتمل على إجراءات وخبرات تنظم بشكل مفردات دراسية الغرض الأساس منها بناء وصقل مهارات الخريجين مما يجعلهم مؤهلين لتلبية متطلبات سوق العمل يتم مراجعته وتقييمه سنوياً عبر إجراءات وبرامج التدقيق الداخلي أو الخارجي مثل برنامج الممتحن الخارجي.

يقدم وصف البرنامج الأكاديمي ملخص موجز للسمات الرئيسة للبرنامج ومقرراته مبيناً المهارات التي يتم العمل على اكسابها للطلبة مبنية على وفق اهداف البرنامج الأكاديمي وتتجلى أهمية هذا الوصف لكونه يمثل الحجر الأساس في الحصول على الاعتماد البرامجي ويشترك في كتابته الملاكات التدريسية بإشراف اللجان العلمية في الأقسام العلمية.

ويتضمن هذا الدليل بنسخته الثانية وصفاً للبرنامج الأكاديمي بعد تحديث مفردات وفقرات الدليل السابق في ضوء مستجدات وتطورات النظام التعليمي في العراق والذي تضمن وصف البرنامج الأكاديمي بشكلها التقليدي نظام (سنوي، فصلي) فضلاً عن اعتماد وصف البرنامج الأكاديمي المعمم بموجب كتاب دائرة الدراسات ت م٢٩٠٦/٣ في ٢٠٢٣/٥/٣ فيما يخص البرامج التي تعتمد مسار بولونيا أساساً لعملها.

وفي هذا المجال لا يسعنا إلا أن نؤكد على أهمية كتابة وصف البرامج الاكاديمية والمقررات الدراسية لضمان حسن سير العملية التعليمية.

مفاهيم ومصطلحات:

وصف البرنامج الأكاديمي: يوفر وصف البرنامج الأكاديمي ايجازاً مقتضباً لرؤيته ورسالته وأهدافه متضمناً وصفاً دقيقاً لمخرجات التعلم المستهدفة على وفق استراتيجيات تعلم محددة.

وصف المقرر: يوفر إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ويكون مشتق من وصف البرنامج.

رؤية البرنامج: صورة طموحة لمستقبل البرنامج الأكاديمي ليكون برنامجاً متطوراً وملهماً ومحفزاً وواقعياً وقابلاً للتطبيق.

رسالة البرنامج: توضح الأهداف والأنشطة اللازمة لتحقيقها بشكل موجز كما يحدد مسارات تطور البرنامج واتجاهاته.

اهداف البرنامج: هي عبارات تصف ما ينوي البرنامج الأكاديمي تحقيقه خلال فترة زمنية محددة وتكون قابلة للقياس والملاحظة.

هيكلية المنهج: كافة المقررات الدراسية / المواد الدراسية التي يتضمنها البرنامج الأكاديمي على وفق نظام التعلم المعتمد (فصلي، سنوي، مسار بولونيا) سواء كانت متطلب (وزارة، جامعة، كلية وقسم علمي) مع عدد الوحدات الدراسية.

مخرجات التعلم: مجموعة متوافقة من المعارف والمهارات والقيم التي اكتسبها الطالب بعد انتهاء البرنامج الأكاديمي بنجاح ويجب أن يُحدد مخرجات التعلم لكل مقرر بالشكل الذي يحقق اهداف البرنامج.

استراتيجيات التعليم والتعلم: بأنها الاستراتيجيات المستخدمة من قبل عضو هيئة التدريس لتطوير تعليم وتعلم الطالب وهي خطط يتم إتباعها للوصول إلى أهداف التعلم. أي تصف جميع الأنشطة الصفية واللاصفية لتحقيق نتائج التعلم للبرنامج.

نموذج وصف البرنامج الأكاديمي

للدراسات الاولية

اسم الجامعة: جامعة .... بغداد .....

الكلية/ المعهد: كلية ....العلوم.....

القسم العلمي : قسم علوم الحاسوب

اسم البرنامج الأكاديمي او المهني: بكالوريوس علوم الحاسوب

اسم الشهادة النهائية: بكالوريوس في التقنيات الاحيائية

النظام الدراسي: فصلي

تاريخ اعداد الوصف: 1/4/2024

تاريخ ملء الملف: 2/4/2024

التوقيع:

اسم رئيس القسم: : أ.م.د. محمد صبيح حمود

التاريخ:

التوقيع:

اسم المعاون العلمي: ا.د. ثمير ابراهيم عباس

التاريخ:

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: أ.د. سراء علي زيدان

التاريخ:

التوقيع:

مصادقة السيد العميد

الأستاذ الساعد الدكتور

زيد صالح حسين

عميد كلية العلوم

١. المؤسسة التعليمية	جامعه بغداد
٢. القسم العلمي / المركز	كلية العلوم / قسم علوم الحاسوب
٣. اسم البرنامج الأكاديمي او المهني	بكالوريوس علوم حاسوب
٤. اسم الشهادة النهائية	بكالوريوس علوم حاسوب
٥. النظام الدراسي : سنوي /مقررات /أخرى	فصلي للمراحل (2,3,4) ونظام بولونيا للمرحلة الأولى
٦. برنامج الاعتماد المعتمد	لا يوجد
٧. المؤثرات الخارجية الأخرى	تدريب صيفي لعام دراسي واحد، دورات تدريبية للطلاب، زيارات ميدانية، الشبكة العنكبوتية (الانترنت)، بحوث علمية في تخصص القسم، المختبرات، المكتبة، مناقشة طالب مشروع التخرج للمرحلة الرابعة
٨. تاريخ إعداد الوصف	2024/4/1

٩. البرنامج الأكاديمي:

- تعرف على أهمية أنظمة التشغيل.
- تعرف على كيفية تفاعل التطبيقات مع نظام التشغيل حيث يعمل الأخير كبرنامج وسيط بين الجهاز والتطبيق.
- تعرف على كيفية نقل أنظمة التشغيل طلبات التطبيق إلى الأجهزة.
- فهم كيفية إدارة أنظمة التشغيل للموارد مثل المعالجات والذاكرة ووحدة الإدخال/الإخراج.
- تمييز كفاءة أو نقص في التقنيات المختلفة المستخدمة من قبل بعض أنظمة التشغيل

١٠. رؤية البرنامج
تتمثل رؤية قسم علوم الحاسوب لدينا في توفير تعليم جامعي دراسات عليا عالي الجودة في علوم الحاسوب يزود الطلاب بالمهارات التقنية وقدرات حل المشكلات و الأساس الأخلاقي المطلوب للنجاح في مختلف المهن وسوق العمل والمساهمة للتنمية الاقتصادية والعلمية والاجتماعية لبلدنا العراق. علاوة على ذلك، يسعى القسم إلى إجراء أبحاث مبتكرة في العديد من المجالات المطلوبة في علوم الحاسوب مثل الذكاء الاصطناعي والأمن السيبراني والوسائط المتعددة وعلوم البيانات، مما يساهم في تقدم المجال ومواجهة تحديات العالم الحقيقي. ويهدف القسم أيضًا إلى التفاعل مع صناعة التكنولوجيا والمؤسسات الأكاديمية والمجتمع لتعزيز التعاون وتبادل المعرفة وتعزيز الاستخدام المسؤول للتكنولوجيا.

١١. رسالة البرنامج
تتمثل مهمة قسم علوم الحاسوب لدينا في الاعتراف به على نطاق واسع لتمكين الطلاب من إنشاء المعرفة ومشاركتها وتطبيقها في علوم الحاسوب وتثقيف الطلاب ليكونوا ناجحين و ذوي مبادئ وفعالين في حل المشكلات ومتعلمين مدى الحياة سيساهمون بشكل إيجابي على الرفاهية الاقتصادية لبلدنا العراق.

١٢. اهداف البرنامج
يهدف قسم علوم الحاسوب الى: ١. إعداد الطلاب للمهن في صناعة التكنولوجيا والدراسات الأكاديمية المتقدمة. ٢. تعزيز بيئة الإبداع والابتكار، وتحفيز الطلاب وأعضاء هيئة التدريس على تطوير أفكار وحلول مبتكرة للقضايا التكنولوجيا الحالية. ٣. تعزيز التعاون مع قادة صناعة التكنولوجيا ، وتزويد الطلاب بالخبرة العملية من خلال التدريب الداخلي والمشاريع صناعة التكنولوجيا ٤. إنتاج منشورات ومشاريع بحثية مؤثرة تعمل على تطوير حدود علوم الحاسوب. ٥. تعزيز السلوك الأخلاقي والاستخدام المسؤول للتكنولوجيا في المجال الرقمي.

١٣. وصف البرنامج

السنة / المستوى	رمز المقرر أو المساق	اسم المقرر أو المساق	الساعات المعتمدة	
المرحلة الأولى				
الفصل الدراسي الأول ٢٠٢٣-٢٠٢٤	CSC11001	اساسيات البرمجة I	٣	٢
	CSC11002	تركيب الحاسوب	٣	٢
	CSC11003	مقدمة الى علم الحاسوب	٣	-
	CSC11004	حساب التفاضل والتكامل	٣	-
	CSC11005	لغة إنكليزية I	٢	-
	CSC11006	الديمقراطية و حقوق الانسان	٢	-
الفصل الدراسي الثاني ٢٠٢٣-٢٠٢٤	CSC11007	اساسيات البرمجة II	٣	٤
	CSC11008	هياكل متقطعة	٣	-
	CSC11009	المنطق الرقمي	٣	٢
	CSC11010	مهارات الكتابة الاكاديمية	٢	٢
	CSC11011	الاحتمالية والاحصاء	٢	-
	CSC11012	لغة عربية I	٢	-

المرحلة الثانية				
الفصل الدراسي الأول ٢٠٢٣-٢٠٢٤	CS92100	مدخل الى التحليل العددي	2	2
	CS92101	**معالجات مايكروية**	2	2
	CS92102	**احتسابية**	2	-
	CS92103	**برمجة شيئية I**	2	2
	CS92104	**هياكل بيانات**	2	2
	CS92105	**برمجة مرئية**	2	2
	ENG92102	لغة انكليزية	2	-
الفصل الدراسي الثاني ٢٠٢٣-٢٠٢٤	CS92200	**تحليل عددي متقدم**	2	2
	CS92201	**معمارية الحاسبة**	2	-
	CS92202	**ترجمة لغة اساسية**	2	2
	CS92203	**برمجة شيئية II**	2	2
	CS9224	**هياكل البيانات والخوارزميات**	2	2
	CS92205	**تقنيات لغات البرمجة**	2	2
	ARA92100	لغة عربية	2	-
المرحلة الثالثة				
الفصل الدراسي الأول ٢٠٢٣-٢٠٢٤	CS93100	معمارية حاسبة متقدمة	2	-
	CS93101	مخططات الحاسبة	2	2
	CS93102	اساسيات قواعد البيانات	2	2
	CS93103	تنظيم الويب	2	1
	CS93104	هندسة البرامجيات	2	-
	CS93105	مدخل الى الذكاء اصطناعي	2	2
	CS93106	برمجة بلغة جافا	1	2
	ENG92103	لغة انكليزية	2	-
الفصل الدراسي الثاني ٢٠٢٣-٢٠٢٤	CS93200	حوسبة الهاتف النقال	1	2
	CS93201	تشفير	2	2
	CS93202	نظم التشغيل I	2	-
	CS93203	شبكات واتصات	1	2
	CS93204	قواعد بيانات عئقية	1	2
	CS93205	اختياري (معالجة صور رقمية)	2	2
	CS93206	اختياري (شبكات عصبية)	2	-
	UOB36036	منهجية البحث	1	-
المرحلة الرابعة				
الفصل الدراسي الأول ٢٠٢٣-٢٠٢٤	CS94100	برمجة متوازية	2	2
	CS94101	نظم تشغيل II	2	2
	CS94102	شبكات حاسبة متقدمة	2	2
	CS94103	اختياري (اساسيات وسائط متعددة)	2	2
	CS94104	اختياري (تجارة الكترونية)	2	-
	CS94105	اختياري (حوسبة الهاتف النقال متقدمة	2	2
الفصل الدراسي الثاني ٢٠٢٣-٢٠٢٤	CS94200	تنقيب بيانات	1	2
	CS94201	امنية الحاسبة	2	-
	CS94202	سيطرة الروبوت	2	-
	CS94203	اختياري (ضغط البيانات	2	2
	CS94204	اختياري (ادوات تطوير البرمجيات	1	2
	CS94205	اختياري (مخططات الحاسبة متقدمة	2	2
	ENG92104	لغة انكليزية	2	-
	CS94206	مشروع التخرج	2	4

١٤. مخرجات التعلم المتوقعة للبرنامج

المعرفة

١. تمكين الطالب على الحصول على فهم ومعرفة اجزاء نظام التشغيل.
٢. تمكين الطالب من تشغيل البرامج وتنفيذها داخل الحاسوب.
٣. تمكين الطلبة من الحصول على المعرفة والفهم للاطارالفكري واسس و تطبيقات تقنيات الحاسوب.
٤. تعريف الطالب باستخدام الطرق الاحصائية لمعالجة البيانات و حل المسائل الرياضية.

المهارات

١. مهارات علمية وعملية
٢. مهارات تذكير وتحليل
٣. مهارات الاستخدام والتطبيق والتطوير
٤. المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي)

١٥. التخطيط للتطور الشخص

- متابعة التطور العلمي من خلال الاتصال بالجامعات العالمية عن طريق الأنترنيت
- المشاركة في المؤتمرات العلمية داخل وخارج العراق
- المشاركة في الورش والندوات العلمية داخل وخارج العراق
- الزيارات الميدانية في المشاريع الصناعية

١٦. أهم مصادر المعلومات عن البرنامج

مركزي – علمي

وحسب متطلبات وزارة التعليم العالي والبحث العلمي بحيث يتطابق مع اخر متطلبات القبول في الجامعات العراقية

١٧. أهم مصادر المعلومات عن البرنامج

-متطلبات جامعية
-توجهات علمية محلية
-متطلبات علمية عالمية
-تغطية الكادر المتخصص محلي

مخطط مهارات المنه																							
يرجى وضع اشارة في المربعات المقابلة لمخرجات التعلم الفردية من البرنامج الخاضعة للتقييم																							
												مخرجات التعلم المطلوبة من البرنامج											
السنة / المستوى	رمز المقرر	اسم المقرر	أساسي أم اختياري	الأهداف المعرفية				الأهداف المهاراتية الخاصة بالبرنامج				الأهداف الوجدانية والقيمية				المهارات العامة والتأهيلية المنقولة(المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي)							
				أ١	أ٢	أ٣	أ٤	ب١	ب٢	ب٣	ب٤	ج١	ج٢	ج٣	ج٤	د١	د٢	د٣	د٤				
الأولى / الفصل الدراسي الأول	CSC11001	اساسيات البرمجة I	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
	CSC11002	تركيب حاسبة	اساسي	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X				
	CSC11003	مقدمة الى علم الحاسوب	اساسي	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X				
	CSC11004	حسبان تفاضل وتكاملI	اساسي		X	X		X	X	X	X	X	X	X	X	X	X	X	X				
	CSC11005	لغة إنكليزية I	اساسي											X	X	X	X	X	X				
	CSC11006	الديمقراطية و حقوق الانسان	اساسي											X	X	X	X	X	X				
الأولى / الفصل الدراسي الثاني	CSC11007	اساسيات البرمجة II	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
	CSC11008	هياكل متقطعة II	اساسي		X	X		X	X	X	X	X	X	X	X	X	X	X	X				
	CSC11009	المنطق الرقمي	اساسي	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X				
	CSC11010	مهارات الكتابة الاكاديمية	اساسي										X	X		X	X	X	X				
	CSC11011	الاحتمالية والاحصاء	اساسي		X	X		X	X	X	X	X	X	X	X	X	X	X	X				
	CSC11012	لغة عربية I	اساسي										X	X		X	X	X	X				

الثانية / الفصل الدراسي الأول	CS92100	مدخل الى التحليل العددي	اساسي	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
	CS92101	**معالجات مايكروية**	اساسي	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
	CS92102	**احتسابية**	اساسي	X		X	X	X	X		X	X	X	X	X	X	X	X	X
	CS92103	**برمجة شيئية I**	اساسي	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
	CS92104	**هياكل بيانات**	اساسي	X	X	X		X	X		X	X	X	X	X	X	X	X	X
	CS92105	**برمجة مرئية**	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	ENG92102	لغة انكليزية	اساسي													X	X	X	X
الثانية / الفصل الدراسي الثاني	CS92200	**تحليل عددي متقدم**	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS92201	**معمارية الحاسبة**	اساسي	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
	CS92202	**ترجمة لغة اساسية**	اساسي	X		X		X	X	X	X	X	X	X	X	X	X	X	X
	CS92203	**برمجة شيئية II**	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS9224	هياكل البيانات والخوارزميات	اساسي	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
	CS92205	**تقنيات لغات البرمجة**	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	ARA92100	لغة عربية	اساسي													X	X	X	X
الثالثة / الفصل الدراسي الأول	CS93100	معمارية حاسبة متقدمة	اساسي	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X

	CS93101	مخططات الحاسبة	اساسي	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
	CS93102	اساسيات قواعد البيانات	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS93103	تنظيم الويب	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS93104	هندسة البرمجيات	اساسي	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
	CS93105	مدخل الى الذكاء اصطناعي	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS93106	برمجة بلغة جافا	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	ENG92103	لغة انكليزية	اساسي											X	X	X	X	X	X
الثالثة / الفصل الدراسي الثاني	CS93200	حوسبة الهاتف النقال	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS93201	تشفير	اساسي	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
	CS93202	نظم التشغيل I	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS93203	شبكات واتصات	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS93204	قواعد بيانات عئقية	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS93205	معالجة صور رقمية	اختياري	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS93206	شبكات عصبية	اختياري	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
	UOB36036	منهجية البحث	اساسي											X	X	X	X	X	X
الرابعة / الفصل الدراسي الأول	CS94100	برمجة متوازية	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CS94101	نظم تشغيل II	اساسي	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	اساسي	شبكات حاسبة متقدمة	CS94102	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	اختياري	أساسيات وسائط متعدد)	CS94103	
X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	اختياري	تجارة الكترونية	CS94104	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	اختياري	حوسبة الهاتف النقال متقدمة	CS94105	

First Grade

English Language Course Description

1. Course Name:	
English Language	
2. Course Code:	
3. Semester / Year:	
1st semester/ First Grade/ 2023-2024	
4. Description Preparation Date:	
22/3/2024	
5. Available Attendance Forms:	
In person	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4 credit hours / 2 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Maysa Ibrahim Abdulhussain Email: Maysaa.i@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	1. Listening Objectives: • Understand and respond to basic greetings, introductions, and simple instructions. • Comprehend and extract information from short, simple spoken passages related to everyday topics. • Identify and understand common vocabulary and expressions in spoken English. 2. Speaking Objectives: • Engage in basic conversations using simple greetings, introductions, and expressions related to personal information. • Ask and answer simple questions about personal details, daily routines, and familiar topics. • Participate in short dialogues and role-plays to practice communication skills. 3. Reading Objectives: • Read and comprehend simple texts, such as signs, labels, short passages, and dialogues. • Recognize and understand basic vocabulary words and phrases in context. • Extract information from texts related to everyday situations and topics. 4. Writing Objectives: • Write short sentences and paragraphs about personal information, experiences, and familiar topics.
9. Teaching and Learning Strategies	
Strategy	• Providing the student with the basics of the topics • Discussions and problem solving during the lecture • Asking intellectual questions, such as why and how

	• Giving assignments

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Hello! p6		**Lectures**	Midterm exam Daily evaluations
٢	2	Your world p12		**Lectures**	Midterm exam Daily evaluations
٣	٤	All about you p18		**Lectures**	Midterm exam Daily evaluations
٤	٤	Family and friends p24		**Lectures**	Midterm exam Daily evaluations
٥	٤	The way I live p32		**Lectures**	Midterm exam Daily evaluations
٦	٤	Every day p40		**Lectures**	Midterm exam Daily evaluations
٧	٤	Mid-term Exam		**Lectures**	Midterm exam Daily evaluations
٨	٤	My favorites p48		**Lectures**	Midterm exam Daily evaluations
٩	٤	Where I live p56		**Lectures**	Midterm exam Daily evaluations
١٠	٤	Times past p64		**Lectures**	Midterm exam Daily evaluations
١١	٤	We had a great time! p72		**Lectures**	Midterm exam Daily evaluations
١٢	٤	I can do that! p80		**Lectures**	Midterm exam Daily evaluations
١٣	٤	Please and thank you p88		**Lectures**	Midterm exam Daily evaluations

١٤	٤	Here and now p96		**Lectures**	Midterm exam Daily evaluations

11. Course Evaluation
Monthly exams - Preparing reports – Laboratory evaluation

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Calculus Course Description

1. Course Name:	
Calculus	
2. Course Code:	
UoB12345	
3. Semester / Year:	
1st semester/ 1st grade/ 2023-2024	
4. Description Preparation Date:	
3-23-2024	
5. Available Attendance Forms:	
weekly	
6. Number of Credit Hours (Total) / Number of Units (Total):	
3	
7. Course administrator's name (mention all, if more than one name)	
Name: Basad Al-sarray Email: basad.husain@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	• To understand the fundamental theory of calculus and its applications. • To understand numbers sets, function, limit, • This course deals with the basic concepts of calculus that are related with topics in computer science. • To understand integral, sequences, and types of problems that can be solved. • To perform the analysis of functions in one variable
9. Teaching and Learning Strategies	
Strategy	Students are expected to use their mathematical knowledge and practices to so problems. This course strengthens students' understanding of functions preparation for the process of differentiation and integration. Calculus conce explored include limits and continuity, derivatives, definite integrals, exponen and logarithmic functions, trigonometric functions, and techniques of integrati Emphasis is placed on the exploration of real-world calculus applicatic Students are expected to learn to choose and use appropriate mathematics statistics to analyze empirical situations, to understand them better, and improve decisions

10. Course Structure

Week No.	Week Title	Martial Covered
Week 1	Numbers sets	Types of sets of numbers, natural, integer, rationale, and real, intervals
Week 2	Inequality solutions	Solve inequalities
Week 3	Absolute values	Solve inequalities defined by absolute
Week 4	Line equations	Types of lie equations
Week 5	Functions	Define function and its types, domain, range, graph of the functions, Rational function, Trigonometric functions, Exponential function.
Week 6	Limit	Computing limit of the functions with different types Rational function, Trigonometric functions, Exponential function. Continuous of the functions

Week 7	Mid-term Exam	
Week 8	Derivative of the functions	Basics of computing derivative of the functions
Week 9	Graph of a function	using asymptotes, critical points, the derivative test for increasing/decreasing functions, and concavity.
Week 10	Application of derivative	solve applied max/min problems, and to solve related rates problems.
Week 11	Integration	General definition: Definite integral, Indefinite integrals.
Week 12	Techniques of integration	Substitution rule of integral, integral by parts, integral by fraction
Week 13	Sequences	General definition, types of sequences, Convergence test of sequences
Week 14	Series	General definition, types of Series, Convergence test of series
Week 15	Power series	Taylor series, Fourier Series
Week 16	**Preparatory week before the final exam**	

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, discussions in class, midterm, final exams, reports, assignment.

12. Learning and Teaching Resources

Thomas-Calculus-12th-Edition-George-B.-Thomas.pd	
http://www.ahmeddemir.net/wp-content/uploads/2015/07/Thomas-Calculus-12th-Edition-George-B.-Thomas.pdf	

Computer Organization Course Description

1. Course Name:
Computer Organization
2. Course Code:
CSC1102
3. Semester / Year:
1st semester/ First Grade/ 2023-2024
4. Description Preparation Date:
24/3/2024
5. Available Attendance Forms:
In Person in classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
7 ETCS Credits
7. Course administrator's name (mention all, if more than one name)
Name: Zainab Raed Ahmed Email: zainab.raid@sc.uobaghdad.edu.iq Name: Enas Ali Abdulmunem Email: Enas.ali@uobaghdad.edu.iq
8. Course Objectives
The objectives of studying computer organization are to provide students with a solid understanding of the internal workings of a computer system, enabling them to analyze, design, and optimize computer systems and software for improved performance and efficiency. 1. To understand the internal structure of a computer system; includes learning about the CPU (Central Processing Unit), memory, input/output devices, and the interconnections between them. 2. To understand how instructions are executed within a computer system. This involves learning about the instruction cycle, fetch-decode-execute cycle, and the role of the CPU in executing instructions. 3. To understand the memory organization and hierarchy of memory. This includes learning about primary memory (RAM), secondary memory (hard drives, SSDs), and cache memory. 4. To understand System Design and Architecture; including knowing word size, address bus size, data bus size, and the total memory capacity.
9. Teaching and Learning Strategies
1. PowerPoint presentation: with pictures, tables, and diagrams to explain the lesson interactively and clearly. 2. Using Visual Aids: such as diagrams and flowcharts to explain complex concepts. Visual representations can make abstract concepts more understandable and help students to understand the relationships between different components of a computer system. 3. Group Projects and Discussion: by assigning group projects or case studies that involve designing, analyzing, or implementing computer systems. Encourage students to work collaboratively, discuss their ideas, and share their findings. This fosters critical thinking, teamwork, and a deeper understanding of computer organization principles. 4. Formative Assessments: Incorporate formative assessments throughout the module to gauge student comprehension and identify areas where additional support may be needed. This can include quizzes, short assignments, or in-class discussions. Provide timely feedback to students to help them track their progress and address any misconceptions.

5. Active Learning Strategies: Encourage active learning through activities such as group discussions, peer teaching, problem-solving sessions, or debates. This promotes student engagement, critical thinking, and a deeper understanding of computer organization concepts.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Knowing about the history of computers.	Introduction to computer history.	Lecture in Classroom	quiz
2	3	Knowing the computer parts and its subparts	Hardware and Software parts of the computer system.	Lecture in Classroom	quiz
3	3	The input/output devices and their examples.	Input and output devices and their types.	Lecture in Classroom	quiz
4	3	Numbering System and conversion between decimal, binary, and hexadecimal.	Numbering System (Binary, Decimal, Hexadecimal)	Lecture in Classroom	quiz
5	3	Internal memory and its types	Internal memory and its types (RAM, ROM, BIOS).	Lecture in Classroom	quiz
6	3	How to calculate main memory size (word size, data bus, and address bus).	Main memory organization and capacity calculation with practical examples.	Lecture in Classroom	assignment
7	Midterm Exam				
8	3	CPU and its components (ALU, CU, Register sets). The 8086 MP as an example	CPU components (CPU, CU, Register sets), How CPU works (READ and WRITE operations).	Lecture in Classroom	quiz
9	3	Introduction to 8086/8088 Microprocessor	Introduction to 8086/8088 MP and its internal architecture.	Lecture in Classroom	quiz
10	3	Calculate the physical and logical address of 8086 MP with examples.	8086 Physical and logical address	Lecture in Classroom	assignment
11	3	8086/8088 addressing mode	8086/8088 addressing mode with examples.	Lecture in Classroom	quiz
12	3	Hard disk drive (HDD) and how data are organized (sector	Hard disk drive and its organization	Lecture in Classroom	quiz

		and cylinder method)			
١3	3	Hard disk capacity calculations	Hard disk capacity calculations with practical examples.	Lecture in Classroom	assignment
١4	3	Solid-state external storage devices (SSD, flash memory chip), and optical storage devices (CD, DVD)	Solid-state external storage devices, and optical storage devices	Lecture in Classroom	quiz
15	Final exam				

11. Course Evaluation

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)		
Formative assessment	**Quizzes**	2	2٠% (2٠)		
	Assignments	2	5% (5)		
	Quizzes / Lab	2	10% (10)		
	assignment/lab	2	5% (5)		
Summative assessment	**Midterm exam**	2hr	1٠% (1٠)		
	Final Exam	3hr	٥0% (50)		
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	- Computer Organization, First Edition – 2015, by Prof. K.Vikram - Fundamentals of Computer Organization and Architecture, by Mostafa Abd-El-Barr and Hesham El-Rewini, Wiley 2005 - THE 80x86 IBM PC AND COMPATIBLE COMPUTERS VOLUMES I & II (Assembly Language, Design, and Interfacing) Fourth edition, by: Muhammad Ali Mazidi & Janice Gillispie Mazidi
Main references (sources)	Computer Fundamentals and Applications, by Ashok Arora, Vikas Publishing House 2015
Recommended books and references (scientific journals, reports...)	COMPUTER ORGANIZATION AND DESIGN FUNDAMENTALS, First Edition- 2007, by David Tarnoff
Electronic References, Websites	http://www.ee.ryerson.ca/~courses/coe608/

Programming Fundamentals I Course Description

1. Course Name:
Programming Fundamentals I
2. Course Code:
CSC11001
3. Semester / Year:
1st semester/ First Grade/ 2023-2024
4. Description Preparation Date:
23/3/2024
5. Available Attendance Forms:
In Person in classroom
6. Number of Credit Hours (Total) / Number of Units (Total):
5/4
7. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. Bara'a Ali Attea Email: bara.a@sc.uobaghdad.edu.iq Name: Asst. Prof. Dr. Aminah Dahim Abbood Email: aminah.abbood@sc.uobaghdad.edu.iq
8. Course Objectives

Course Objective	• To examine a C/C++ program. • To explore how a C/C++ program is processed. • To review the steps required to execute programs written in C++. • To learn what an algorithm is and explore problem-solving techniques. • To become aware of structured design programming. • To become familiar with the basic components of a C++ program, including data types, input/output, control structures, and user-defined functions.

9. Teaching and Learning Strategies

Strategy	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises and daily quizzes, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Three main rules for problem solving techniques.			Oral, Practical
2	5	Output statements.			Oral, Practical
3	5	Input statements.			Oral, Practical
4	5	Assignment operator, declaration and assignment statements.			Oral, Practical
5	5	Mathematical operators and expressions.			Oral, Practical

6	5	Pre- and post- increment and decrement. If function, if statements, and body of if statement.			Oral, Practical
7	3	Midterm Exam			Written Exam
8	5	If…else function and if…else statements.			Oral, Practical
9	5	Loop Control Variable (LCV), LCV initialization, LCV conditional expression, and LCV update.			Oral, Practical
10	5	While function, while statements, and body of while statement.			Oral, Practical
11	5	Nested while loops.			Oral, Practical
12	5	For function, for statements, and body of for statement, Nested for loops.			Oral, Practical
13	5	One-Dimensional arrays			Oral, Practical
14	3	**Preparatory week before the final Exam**			Oral, Practical
15	3	**Final Exam**			Written Exam

11. Course Evaluation

- Cumulative Score: 40 (Daily Exam 5, Written Exam 15, Report 5, Lab 15)
- Mid-term Exam: 10
- Final-term Exam: 50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	C++ Programming: From Problem Analysis to Program Design, 5th Edition, D.S. Malik, 2011.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Democracy and human rights Course Description

1. Course Name:	
Democracy and human rights	
2. Course Code:	
3. Semester / Year: 2023-2024/First	
1st semester/ First Grade/ 2023-2024	
4. Description Preparation Date:	
22/3/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30/2, 2023-2024/ First	
7. Course administrator's name (mention all, if more than one name)	
Name: Anwer Ismael Khaleel Email: anwar@ircoedu.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	• **The student understands what democracy is, its types, human rights, its types and characteristics.** • **Urging the student to understand the meaning of freedom in its correct form and how it is embodied in democratic practices and respect for human rights.** • **Enabling the student to analyze the historical precedents of human applications of democracy and respect for human rights.** • **It evaluates the experiences that have occurred in human societies with regard to democracy and human rights, even if they are in their simple form.**
9. Teaching and Learning Strategies	
Strategy	1- Theoretical methods: (a) - The prescribed book. (b) - Using other means such as presentation. Power Point. 2- Practical methods: (a) - Interactive dialogue (b) - Showing documentaries or videos related to the topic of the lecture. 3- Carrying out representative activities among students that embody a specific situation related to the topic of the lecture.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Determine the definition of the concept of human rights Its recipes, types and generations	Definition of the concept of human rights Its recipes, types and generations	theoretical	theoretical
2	2	The historical development of activating human	The historical development of activating human	theoretical	theoretical

		rights and regional and international organizations defending human rights	rights and regional and international organizations defending human rights		
3	2	Definition of democracy and its types	Definition of democracy and its types	theoretical	theoretical
4	2	Elements or components of democracy and conditions for its success	Elements or components of democracy and conditions for its success		
5	2	Elections, their types, pressure groups, their types, and their differences with political parties	Elections, their types, pressure groups, their types, and their differences with political parties		

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Introduction to Computer Science Course Description

1. Course Name:	
Introduction to computer science	
2. Course Code:	
3. Semester / Year:	
1st semester/ First Grade/ 2023-2024	
4. Description Preparation Date:	
22-03- 2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Nasreen Jawad Kadhim Dr. Ahmed Hashim Husein Email: nasreen.kadhim@sc.uobaghdad.edu.iq Email: ahmed.husein@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	• To identify the computer system and its components together with understanding the needed interaction between these components for performing solutions for given tasks regardless of the programming languages used. • To recognize the safety and security measures when dealing with a computer • To identify the fields of study in computer science and the essential concepts in computer science. • To recognize the different generations to programming languages. • To develop skills in critical thinking and problem solving for the aim to prepare a program designer. • To understand the fundamental stages of the program development life cycle. • To understand the ways to design the solution of a given problem either by writing an algorithm or by drawing a flowchart. • To understand the program control flow. • To understand the stages for compiling and processing a given program. • To identify the common methodologies for programming will be studied. • To identify for the C++ Programming language, Program structure, Processing C++ program, Control structures for Sequential, Branched, and Looping.
9. Teaching and Learning Strategies	
Strategy	• Theoretical concepts, principles related to this module can be delivered through traditional lectures supplemented with examples to improve understanding. • Encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students. • Allocating projects to students divided into groups encourages collaboration, problem-solving, and teamwork. Students can work together to solve problems through analyzing problems and designing programs.

10. Course Structure	
	Material Covered
Week 1	Part 1: Introduction to Computer System Part 2: Safety and security measures when dealing with a computer
Week 2	Computer System Components
Week 3	Part 1: Generations of Programming Languages Part 2: Fields of study in computer science Part 3: Essential concepts in computer science
Week 4	Program Development Life Cycle: Part I
Week 5	Program Development Life Cycle: Part II
Week 6	Program Design: Flowcharts
Week 7	Program Design: Algorithms
Week 8	Program Control Flow
Week 9	Programming with Problem Analysis-Coding-Execution Cycle
Week 10	Programming Methodologies
Week 11	Structure of C++ Program
Week 12	Steps For Processing C++ Program
Week 13	Constructs in C++ for Selection: Part I
Week 14	Constructs in C++ for Selection: Part II
Week 15	Constructs in C++ for Repetition
Week 16	**Preparatory week before the final exam**

11. Course Evaluation
Distributing the score out of 50 according to the tasks assigned to the student such as reports, assignments, quizzes, projects, midterm exam and final exam. Assignments 10%, Quizzes 10%, Mid exam 10%, Report 10%, Project 10%, Final exams 50%

12. Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	C++ Programming: From Problem Analysis to Program Design, Fifth Edition D.S. Malik	Yes
Recommended Texts	C++ Programming: From Problem Analysis to Program Design (MindTap Course List) 8th Edition D.S. Malik	
Websites	Free	

Arabic Language Course Description

1. Course Name:	
Arabic language	
2. Course Code:	
3. Semester / Year:	
2nd Semester/ 1st Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
23 March 2024	
5. Available Attendance Forms:	
On campus, full time	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hours / 2 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Eman Hussein Muhy Email: Eman.h.m@coeng.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	1. That the student acquires the ability to use the language correctly in communicating with others through speaking, writing, listening and reading. Which makes their affairs easier for them and helps them meet their needs and interests. 2. That the student is equipped with what helps them benefit from their free time through reading and reading. 3. That students acquire the ability to express themselves and what comes under their senses verbally and in writing. 4. That the student is provided with a linguistic wealth by providing them with some words and structures. 5. That students acquire the ability to express themselves through linguistic skills related to: speaking, reading, listening, and writing. 6. Developing students' inclination towards reading and studying. 7. Identify the beauties of the Arabic language and its literature. 8. Providing the student with the skills of communicating with Arab heritage and achieving integration between it and various fields of culture. 9. Using grammar in reading and writing (through exercises related to the proposed topics)
9. Teaching and Learning Strategies	
Strategy	1) Lectures. 2) Tutorials. 3) Homework and Assignments. 4) Tests and Exams. 5) In-Class Questions and Discussions. 6) Extracurricular Activities. 7) Seminars. 8) In- and Out-Class oral conservations.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	**2**		The origins of the Arabic		

			language		
2	**2**		Common linguistic errors		
3	**2**		Common linguistic errors		
4	**2**		The hamza of cutting and connecting		
5	**2**		Drawing the middle and extreme hamza		
6	**2**		Letters that increase in writing		
7	**2**		punctuation marks		
8	**2**		Daily exam		
9	**2**		Number, rules for writing numbers		
10	**2**		Exam		
11	**2**		Sound masculine plural		
12	**2**		The subject and the predicate		
13	**2**		Abu Al-Qassam Al-Shabi, his life and explanation of the verses		
14	**2**		Badr Shaker Al-Sayyab, his life and explanation of the verses		
15	**2**		Dhaad and Dhaa		
16	**2**		final exam		

11. Course Evaluation	
60% final exam, 40% quizzes and HomeWorks and other assignments.	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Mustafa Al-Tuni, The Hamza in the Arabic Language, a Linguistic Study. Saad bin Ali bin Muhammad, the difference between dhaad and dhaa.
Main references (sources)	General Arabic for non-specialist departments. Ab Qader Amin
Recommended books and references (scientific journals, reports...)	Youssef Atta Al-Tarifi is clear in spelling and punctuation Muhammad Al-Adnani, Dictionary of Linguistic Errors
Electronic References, Websites	Websites related to the topics

Digital Logic Course Description

1. Course Name:	
Digital Logic	
2. Course Code:	
CSC1209	
3. Semester / Year:	
2nd Semester/ 1st Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
21/3/2024	
5. Available Attendance Forms:	
Mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
ECTS Credits : 6 **SWL (hr/sem) : 150**	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Bushra A. Sultan Email: Bushra.sultan@sc.uobaghdad.edu.iq Name: Nahlah Abdulrahman Alkhalidi Email: Nahlah.a@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	The course will teach the students about different systems in digital computers including: binary, octal, hexadecimal number systems, gray code and ASCII code. The course will help the students to simplify and analyze basic combinational logic circuits and write the Boolean output expression for any combinational logic circuit. In addition, the students will learn to design logic circuits to do specific functions like addition in binary as well as studying the fundamentals of sequential logic devices such as Flip-Flop.
9. Teaching and Learning Strategies	
Strategy	The main strategy that will be adopted in delivering this module are: 1. Power point presentation (Data show). 2. Explanation on the white board using different color markers. 3. Discussions with the student during teaching. 4. Interaction with students through daily problems practice through lecture. 5. Solve different problems with more exercises. 6. Use tool kits in LABs to design logic circuits in addition to simulator software. 7. Prepare reports that develop critical thinking for students. 8. Submit assignment that develop student learning.

10. Course Structure (Theoretical Part)

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		• Introduction to Digital computers • Number systems (Binary, Decimal, Octal, and Hexadecimal)	Explanation using projectors and the blackboard, as well as	Quizzes, semester exams, homework and the final exam.
2			• Conversions from decimal to other bases and vice versa		

			• The relation between the Octal, Hexadecimal and Binary numbers	discussions and questions	
3			• Arithmetic Operation • Complements		
4			• The subtraction using complements (1's and 2's complements) • Quiz1		
5			• Binary logic and gates • Boolean functions (logical expression, T.T and logic circuit)		
6			• Simplification of Boolean functions using Boolean algebra • Canonical forms (Sum of Minute terms)		
7			• Canonical forms (product of maxterms), Standard forms (Sum of Products and product of sums) • Conversions between canonical and standard forms and vice versa		
8			• Map simplification		
9			• Product of sum simplification and don't care conditions • Other Logical Operations (NAND and NOR gates)		
10			• The Design procedure of Combinational Circuits • Adder		
11			• Subtractor • Code Convertor		
12			• Comparator • Decoder		
13			• Multiplexer • Midterm Exam		
14			• Read Only Memory (ROM)		
15	3		• Sequential Circuits		
Course Structure (Practical Part)					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**2**		Connect the basic gates (AND, OR, NOT)	**Computer**	Quizzes, semester exams, homework,
2			Connect simple Boolean functions		

3			Simplify complex Boolean function and then connect it using the basic gates		Assignments reports and the final exam
4			Implement Boolean functions in Standard and canonical form and connect it		
5			Convert Boolean function from standard form to canonical form and connect it		
6			Implement the XOR, XNOR functions and connect it, connect other logic Gates NAND, NOR		
7			Simplify Boolean function using Map method and connect using NAND, NOR gates		
8			Implement the adder and connect it using gates		
9			Implement the subtractor and connect it using gates		
10			Implement the any code conversion system and connect it using gates		
11			Implement the Error Detection Circuit and connect it using gates		
12			Implement the Binary Multiplier and connect it using gates		
13			Implement the Decoder and connect it using gates		
14			Implement any combinational logic circuit using decoder		
15			Implement the multiplexer and connect it using gates		

11. Course Evaluation

1- Midterm exam – 15 score.
2- Quizzes – 5 score.
3- Homeworks – 5 score.
4- Mid laboratory – 15 score.
5- Final exam – 20 score laboratory + 40 score theoretical.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1- Logic and Computer Design Fundamentals "2'nd and 3ed editions", By "M. MORRIS MANO and CHARLES R. KIME, Prentice-Hall, Inc, 2001, 2002. 2- " Digital fundamentals "**;** Thomas L. Floyd; Pearson Prentice Hall,2009
Recommended books and references (scientific journals, reports...)	

Electronic References, Websit	

Discrete structures Course Description

1. Course Name:	
Discrete structures	
2. Course Code:	
CSC1208	
3. Semester / Year:	
2nd Semester/ 1st Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
2024/3/23	
5. Available Attendance Forms:	
2024/3/23	
6. Number of Credit Hours (Total) / Number of Units (Total)	
7. Course administrator's name (mention all, if more than one name)	
Name: Uhood Saadi Abulkareem Al-Hassani Email: uhood.s@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	1. Discrete Structures are the abstract mathematical structures used to represent discrete objects and relationships between these objects. These discrete structures include logic, sets, permutations, relations, graphs, trees, and finite-state machines. 2. Discrete mathematics is about the mathematics of integers and of collections of objects. **3.** It underlies the operation of digital computers, and is used widely in all fields of computer science for reasoning about data structures, algorithms and complexity. **4.** Topics covered in the module include logic, proof techniques and sets, functions, relations, summations and recurrences, counting techniques and recursion.
9. Teaching and Learning Strategies	
Strategy	The main strategy that will be adopted in delivering statistics term is to improve student's skills and extending via participation in the exercises. Subsequently, this leads to achieved through classes and some sampling activities that are interesting to the students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1		Introduction and basic concepts of Discrete Structures and definitions.		Data show	Quiz
2		Chapter 1: (Mathematical Logic) 1- Introduction 2- Simple Logic Statements 3- Variable Use in Proposition Statements 4- Compound Logic Statements		Data show	Quiz

		5- Logical Propositions &Truth tables 6-Normal forms (conjunctive & disjunctive)			
3		7- Logical Equivalence 8- Tautology Statement & Contradiction Statement 9-Logical Implication & Validity of well-formed formula 10-Algebra Of Propositions 11- Conditional Statements Variations		Data show	Quiz
4		Chapter 2: (Sets Theory) 1- Introduction 2- Methods of Expressing Sets 3- Principal Concepts of Sets 4- Venn Diagrams 5- Sets of Numbers 6- Algebra of Sets 7- Family of Sets & index Family of Sets 8- Ordered Pairs & Product Sets		Data show	Quiz
5		Chapter 3: (Relations) 1- Introduction 2- Binary Relation 3- Graph of the Relation 4- Photographer representation of the relations 5-The Domain & the Range of a Relation 6- Identity Relation & Inve Relation		Data show	Quiz
6		7- Composition Relation 8- Type of Relation 9- Equivalence Relations		Data show	Quiz
7		Mid-term Exam		Data show	Quiz
8		Chapter 4: (Functions) 1- Introduction. 2- Principle Concepts & Definition 3- Models of Functions		Data show	Quiz
9		4-Composition Function 5- Algebra of Function		Data show	Quiz
10		Chapter 5: (Vectors and Matrices) 1- Introduction 2- Vectors 3- Matrices 4- Models of Square Matrices 5- Algebra in the Matrices 6- Determinants		Data show	Quiz

11		7- Minors & Cofactors 8- Find Inverse Square Not Singu Matrix		Data show	Quiz
12		9- Solving System of liner equations using the Nonhomogeneous Matrix inverse and examples		Data show	Quiz
13		10- Grammar Rule and examples		Data show	Quiz
14		Chapter 6: (Graph Theory) 1- Introduction 2- Principal Concepts 3- Type of Graphs		Data show	Quiz
15		4- Definitions 5- Examples of Graphs 6- Graphs & Relation 5. Trees · Properties · Traver strategies 6. Undirected graphs 7. Directed graphs 8. Weighted graphs (in algorith Spanning trees/forests		Data show	Quiz

11. Course Evaluation
40% on the course (5% on the, (on the written final exam, 10% on the final lab exam 50%) 60%. Attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Programming Fundamentals II Course Description

13. Course Name:	
Programming Fundamentals I	
14. Course Code:	
CSC12107	
15. Semester / Year:	
2nd Semester/ 1st Grade/ Academic Year 2023 -٢٠٢٤	
16. Description Preparation Date:	
23/3/2024	
17. Available Attendance Forms:	
18. Number of Credit Hours (Total) / Number of Units (Total):	
5/4	
19. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Bara'a Ali Attea Email: bara.a@sc.uobaghdad.edu.iq Name: Lec. Wajeeh Email: wajeeh @sc.uobaghdad.edu.iq	
20. Course Objectives	
Course Objectives	• To become aware of 2D arrays. • To be familiar with the scope of variables. • To become familiar with user-defined functions.
21. Teaching and Learning Strategies	
Strategy	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises and daily quizzes, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Playing with 2D arrays.			Oral, Practical
2	5	Square matrices, main diagonal, and secondary diagonal.			Oral, Practical
3	5	Playing with the triangle components of a square matrix.			Oral, Practical
4	5	Manipulating array indices and elements.			Oral, Practical
5	5	Sorting arrays.			Oral, Practical
6	5	Finding the Kth smallest/largest element in the array without sorting it.			Oral, Practical

7	3	Midterm Exam			Written Exam
8	5	User-defined functions: declaration, header, body, formal parameters, and actual parameters.			Oral, Practical
9	5	Passing parameters by value to a user-defined function.			Oral, Practical
10	5	Passing parameters by address to a user-defined function.			Oral, Practical
11	5	Void user-defined functions.			Oral, Practical
12	5	User-defined function with return.			Oral, Practical
13	5	Passing arrays and matrices to a user-defined function.			Oral, Practical
14	3	**Preparatory week before the final Exam**			Oral, Practical
15	3	**Final Exam**			Written Exam

23. Course Evaluation

- Cumulative Score: 40 (Daily Exam 5, Written Exam 15, Report 5, Lab 15)
- Mid-term Exam: 10
- Final-term Exam: 50

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	C++ Programming: From Problem Analysis to Program Design, Edition, D.S. Malik, 2011.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Probability and Statistics Course Description

1. Course Name:	
Probability and Statistics	
2. Course Code:	
CSC12011	
3. Semester / Year:	
2nd Semester/ 1st Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
3-23-2024	
5. Available Attendance Forms:	
weekly	
6. Number of Credit Hours (Total) / Number of Units (Total):	
2	
7. Course administrator's name (mention all, if more than one name)	
Name: Basad Al-sarray Email: basad.husain@sc.uobaghdad.edu.iq Zeina Mueen Mohammed e-mail: zeina.m@uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	To understanding the fundamental concepts in statistics and probability and its applications. To understand random number generation and simulation numbers sets, function, limit. This course deals with the basic concepts of probability that are related with topics in computer science. To understand data collections, samples c and variables. To perform the analysis of random experiments
9. Teaching and Learning Strategies	
Strategy	Students are expected to use their knowledge and practices to solve problems. This course strengthens students' understanding of probability in preparation for the process of simulation and data collection. Emphasis is placed on the exploration of real-world probability applications. Students are expected to learn to choose and use appropriate tools in statistical to analyze empirical situations, to understand them better, and to improve decisions
10. Course Structure	
Week	**Material Covered**
Week 1	Introduction and basic concepts of statistics and definitions. Types of data sets, types of sampling and collecting data.
Week 2	Construction of frequency distributions (grouped data and ungrouped data) Relative frequency distributions and cumulative frequency distributions (less than & more than)
Week 3	Frequency Distribution Charts: Histogram, Polygon, curve and Pie charts.
Week 4	Measures of Central Tendency, Measures of Variation
Week 5	Introduction to probability and counting rules
Week 6	Combinations and Permutation
Week 7	Mid-term Exam
Week 8	Probability of discrete random variable
Week 9	Probability of continuous discrete random
Week 10	Moments computing of density and mas function
Week 11	Discrete probability distribution: (Uniform -Binomial)

Week 12	Continuous probability distribution (Uniform, Normal)
Week 13	Simulation experiments and data generation
Week 14	Preparation of final exam
Week 15	Final exam
11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, discussions in class, midterm, final exams, reports, assignment .	
12. Learning and Teaching Resources	
Elementary Statistics: A Step-by-Step Approach ISE	11th Edition 1265248125 · 9781265248123 By Allan G. Bluman © 2023 | Published: September 22, 2022 https://www.mheducation.co.uk/elementary-statistics-a-step-by-step-approach-ise-9781265248123-emea-group

Second Grade

The crimes of the Baath regime in Iraq Course Description

1. Course Name:	
The crimes of the Baath regime in Iraq	
2. Course Code:	
3. Semester / Year:	
1st Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
21/3/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 Hr. / 2Un.	
7. Course administrator's name (mention all, if more than one name)	
Name: Anwer Ismael Khaleel Email: anwar@ircoedu.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	1. Observation. 2. Experimentation. 3. Practice. **4.** Creativity.
5. Teaching and Learning Strategies	
Strategy	1- Theoretical methods: (a)- The prescribed book. (b)- Presenting the lecture through various electronic means. 2- Practical methods: (a) - Interactive dialogue between the students and the professor on the one hand and the students among themselves on the other hand. 3- Representative activities to embody a specific situation related to the subject of the study.

6. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understanding the concept of crime, and defining international crime. Sections of crime.	Crime departments	Electronic offer Discussion	Evaluation through discussion and Daily exam

2	2	Psychological crimes + social crimes carried out by the Baath regime	Psychological crimes The multiple mechanisms of psychological and social crimes used by the Baath regime against the Iraqi people	Electronic offer Discussion	Evaluation through discussion and Daily exam
3	2	Understanding environmental crimes. to the Baathist regime	The consequences of these crimes on the Iraqi environment and the Iraqi individual. Basra Governorate and the city of Halabja and the dangers that befell them due to these environmental crimes The consequences of these crimes on the Iraqi environment and the Iraqi individual.	Electronic offer Discussion	Evaluation through discussion and Daily exam
4	2	The concept of mass graves.	The concept of mass graves.	Electronic offer Discussion	Evaluation through discussion and Daily exam
5	2	University cemeteries in 1963.	University cemeteries in 1963.	Electronic offer Discussion	Evaluation through discussion and Daily exam
6	2	Mass graves for the period between 1979-2023	Mass graves for the period between 1979-2023	Electronic offer Discussion	Evaluation through discussion and Daily exam
6	2	: Mass graves for the period between 1979-2023	: Mass graves for the period between 1979-2023		

7. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
8. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	books once again The Internet
Main references (sources)	Book of crimes of the Baath regime in Iraq

Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	المتضررون من سياسات النظام البائد وثائق تدين النظام البائد -http://www.un.org/ar/universal-declaration-human بحث عن حقوق الإنسان، https://mawdoo3.com/D8%A5%D9%8 https://iraqld.e-sjc-services.iq/LoadLawBook.aspx?page=14&SC=290320063592085&BookID=25626&__cf_chl_tk=wPSIzSh7w4OS3kgq1Xy_PPdkQiQSgHKAQKuN4siQ2d8-1704313282-0-gaNycGzNDHs قاعدة التشريعات العراقية

Introduction to Numerical Analysis Course Description

1. Course Name:	
Introduction to Numerical Analysis	
2. Course Code:	
3. Semester / Year:	
1st Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
21/3/2024	
5. Available Attendance Forms:	
Mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours theoretical and practical / 3 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Najlaa Mohammed Hussein Email: najlaa.alkhafaji@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectiv	• Numerical analysis is the study of algorithms for solving mathematical problems using computers by providing numerical methods for solving nonlinear equations, interpolation, and calculus. • Improving the student's skills in numerical methods using numerical analysis programs and computer capabilities. • Develop a basic understanding of the construction of numerical algorithms, their application and how to use them for the numerical solution of problems in science and engineering, such as finding the root, approximating functions, differential equations, and direct and iterative methods in linear algebra. • Learn how to estimate and control errors and study the convergence and stability of numerical algorithms.
9. Teaching and Learning Strategies	
Strategy	1. Explain the scientific material to students in detail. 2. The student's participation in solving mathematical problems. 3. Discussion and dialogue about vocabulary related to the topic. 4. Use the Google classroom to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries. 5. Also, the Google classroom is used to give homework's and upload the answers and to announce exam dates and grades... etc.

6. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation

		Outcomes			method
1	2 Theoretical + 2 Laboratory		1. Introduction 1.1 Numerical Analysis 1.2 Mathematical Model	Explanation using projectors and the blackboard, as well as discussions and questions	Quizzes, semester exams, homework assignments and the final exam.
2			1.3 Approximation & Errors. 1.4 Iterative Methods.		
3			2. Solution of Equations of a Single Variable: 2.1 Bisection Method – Part I		
4			2.1 Bisection Method – Part II		
5			2.2 Newton-Raphson Method – Part I		
6			2.2 Newton-Raphson Method – Part II		
7			2.3 Secant Method – Part I		
8			2.3 Secant Method – Part II		
9			2.4 False Position Method – Part I		
10			2.4 False Position Method – Part II		
11			2.5 Fixed Point Method – Part I		
12			2.5 Fixed Point Method – Part II		
13			2.6 Zeros of Polynomials – Part I		
14			2.6 Zeros of Polynomials – Part II		
15	2		Exam		

7. Course Evaluation

1- Midterm exam – 15 score.
2- Quizzes – 5 score.
3- Homeworks – 5 score.
4- Mid laboratory – 15 score.
5- Final exam – 20 score laboratory + 40 score theoretical.

8. Learning and Teaching Resources

Required textbooks (curricular books, if an	
Main references (sources)	1- **"Numerical Methods for Engineers and Scientists Using MATLAB"**, Ramin S. Esfandiari, CRC Press (Taylor & Francis Group), 2nd edition, 2017. 2- **"Numerical Analysis"**, Richard. L. Burden, J. Douglas. Faires and Annette M. Burden, Brooks/Cole, Cengage Learning, 10th edition, 2016. 3- **"Programming with MATLAB for Scientists: A beginner's Introduction"**, Eugeniy E. Mikhailov, CRC Press (Taylor & Francis Group), 2017.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Visual Programming Course Description

1. Course Name:	
Visual Programming	
2. Course Code:	
3. Semester / Year:	
1st Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
22/3/2024	
5. Available Attendance Forms:	
22/3/2024	
6. Number of Credit Hours (Total) / Number of Units (Total):	
2/2	
7. Course administrator's name (mention all, if more than one name)	
Name: Asst. Prof. Dr. Adnan J. Jabir Email: adnan.jabir@sc.uobaghdad.edu.iq Name: Dr. Maysaa Ibrahim	
8. Course Objectives	
Course Objectives	The goal of the course is to help students gain knowledge in the basic concepts of obje oriented programming and build skills to develop modern software programs using CSharp language. The course covers most of the CSharp language structure and syntax, well as how to use features of Windows Forms and Controls to make programs w graphical user interfaces.
9. Teaching and Learning Strategies	
Strategy	1- Explaining the scientific material to students in detail. 2- Students' participation in solving programming problems. 3- Discussion and dialogue about vocabulary related to the topic. 4- Use the electronic classroom (Google Classroom) to upload lectures in the form of P files (in short form), where their details are explained in the lecture, with ma examples solved on the blackboard, discussion with students, and answers to th inquiries. The electronic classroom is also used to give homework assignments and upload answ within the electronic classroom. The classroom is also used to announce exam dates a grades... etc.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	٤		Introduction to CSharp.NET	- Lectures - Discussion - Peer Teaching - Practical work	- Short exams - Mid / final exams - Assignments - Homeworks Projects
٢	٤		User Interface Desig		
٣	٤		Button, Textbox, Lab controls		
٤	٤		Variables, Constants scopes and Calculatio		
٥	٤		Decisions and loops		

٦	٤		Check Box, Radio Button		
٧	٤		Arrays and collection		
8	٤		Working with timers and scrollbars		
9	٤		Lists, checked list, ar dropdown controls		
10	٤		Picturebox and drawings		
11	٤		Menus, Common Dialog Boxes, and Multiform objects		
12	٤		User defined functio		
13	4		Working with files		
14	4		Object oriented Programs		

11.

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	*Mastering Microsoft CSharp 2010, Edition by Evangelos Petroutsos,*
Main references (sources)	*Beginning C# by Matthew Macdonald*
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	*Online lectures and YouTube lessons.*

Microprocessor Course Description

1. Course Name:	
Microprocessor	
2. Course Code:	
3. Semester / Year:	
1st Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
22-3-2024	
5. Available Attendance Forms:	
Theoretical	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours per week\ 2 unites	
7. Course administrator's name (mention all, if more than one name)	
Name: lecturer Qaswaa Khaled abood Email: qaswaa.k@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	The topic aims to define the concepts of computer architecture in an expanded manner and focuses on modern microprocessor architectures, identifying the types of memory that make up modern computer architectures, and the methods and reasons for improving the performance of modern computers.
9. Teaching and Learning Strategies	
Strategy	Explanation on the board and projector. Uploading PDF files of lectures and explanation videos within electronic classes and official department channels. Giving multiple examples related to the subject and having the students solve them in class and urging them to compete and solve them quickly.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2\week	**Introduction to computer architecture**		Data show	quiz
2	2\week	**Method for I\O programing**		Data show	quiz
3	2\week	**Programmed I/O tech. soft ware**		Data show	quiz
4	2\week	**Interrupt tech.**		Data show	quiz
5	2\week	**Direct Memory Access (DMA) tech.**		Data show	quiz
6	2\week	**Multiprogramming**		Data show	quiz
7	2\week	**Multiprocessing**		Data show	quiz
8	2\week	**Multicore**		Data show	quiz
9	2\week	**Exam**		Data show	quiz
10	2\week	**Memory system**		Data show	quiz
11	2\week	**Memory hierarchy architecture**		Data show	quiz
12	2\week	Exam		Data show	quiz

13	2\week	Main and cash memory		Data show	quiz
14		Exam		Data show	quiz
15	2\week	Microcode		Data show	quiz

11. Course Evaluation
• Monthly and daily written exams • Daily class attendance and comments • Implementing and completing the required tasks • Final written exam

12. Learning and Teaching Resources	
- Computer Organization and Architecture Designing for Performance, 8th Edition, by William Stallings.	Computer Organization and Architecture Designing for Performance, 8th Edition, by William Stallings.
Basic Computer Architecture, Smruti R. Sarangi, 2021 Modern Computer Architecture and Organization: Learn X86, ARM, and RISC-V Architectures and the Design of Smartphones, PCs, and Cloud Servers Jim Ledin, 2022.	Basic Computer Architecture, Smruti R. Sarangi, 2021 Modern Computer Architecture and Organization: Learn X86, ARM, and RISC-V Architectures and the Design of Smartphones, PCs, and Cloud Servers Jim Ledin, 2022.
https://www.geeksforgeeks.org/computer-organization-and-architecture. https://electronicsdesk.com/ https://en.wikipedia.org/	https://www.geeksforgeeks.org/computer-organization-and-architecture. https://electronicsdesk.com/ https://en.wikipedia.org/

English Language Course Description

1. Course Name:	
English Language	
2. Course Code:	
3. Semester / Year:	
1st Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
March/ 21/ 2024	
5. Available Attendance Forms:	
Mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 theoretical hours * 15 weeks = 30 hours	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Ahmad Hashim Hussein Email: ahmedhashem@pgiafs.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	**Knowledge**
	Learning Outcomes 1 — Helping to improve English Language in general.
	Skills
	Learning Outcomes 2 — In writing English Language
	Learning Outcomes 3 — In Reading English Language
	Ethics
	Learning Outcomes 4 — Listening in different location.
	Learning Outcomes 5 — Speaking in different location.
9. Teaching and Learning Strategies	
Strategy	1- Explaining the scientific material to students in detail. 2- Students' participation in solving exercises inside the class. 3- Discussion and dialogue about vocabulary related to the topic. 4- Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries. The electronic classroom is also used to give homework assignments and upload answers within the electronic classroom. The classroom is also used to announce exam dates and grades... etc.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Present, past, future+ Questions+ Questions words	Unit ١	Datashow + White board	Quiz
2	2	Present tenses + have/have got	Unit ٢	Datashow + White board	Quiz
3	2	Past tenses+ Adverbs + when	Unit 3	Datashow + White board	Quiz

4	2	Quantity + Articles	Unit ٤	Datashow + White board	Quiz
5	2		Exam		
6	2	Verb patterns+ Future forms+ Phrasal verb	Unit ٥	Datashow + White board	Quiz
7	2	What … like? + as … as + Relative pronouns	Unit ٦	Datashow + White board	Quiz
8	2	Present Perfect+ for and since+ ever and never	Unit ٧	Datashow + White board	Quiz
9	2	have to+ should + must	Unit ٨	Datashow + White board	Quiz
10	2	Past Perfect+ Narrative tenses+ Joining sentences	Unit ٩	Datashow + White board	Quiz
11	2		Exam		
12	2	Passives	Unit ١٠	Datashow + White board	Quiz
13	2	Present Perfect Continuous	Unit ١١	Datashow + White board	Quiz
14	2	First conditional *if* + *will*+ Second conditional *if* + *would*	Unit ١٢	Datashow + White board	Quiz
15	2		Exam		

11. Course Evaluation

60% on the written final exam, 40% on the course (30% on the monthly exams, 5% on the quizzes, 5% on the assignments.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	The core textbook is Soars, John and Liz, (2011), New Headway Plus Pre-Intermediate Student's Book, Special Edition, Oxford University Press
Main references (sources)	The core textbook is Soars, John and Liz, (2011), New Headway Plus Pre-Intermediate Student's Book, Special Edition, Oxford University Press
Recommended books and references (scientific journals, reports...)	New Headway Plus provides an integrated skills course with each unit divided into grammar, vocabulary, skills work and everyday English segments
Electronic References, Websites	Oxford University Press: The New Headway series is published by Oxford University Press. Visit their website at www.oup.com and search for "New Headway Plus, Special Edition, pre-Intermediate" or browse their English language teaching section for information on the course.

Object Oriented Programming Course Description

1. Course Name:	
Object Oriented Programming	
2. Course Code:	
3. Semester / Year:	
1st Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
March/ 21/ 2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
7. Course administrator's name (mention all, if more than one name)	
Name: Name: Dunia Fadheel Saffo Email: dunia.f@sc.uobaghdad.edu.iq Name: Sura Abed Sarab Email: sura.a@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	**Knowledge**
Learning Outcomes 1	thinking about and organizing code for natural objects, using classes definitions
Learning Outcomes 2	such as classes and ,objects
Learning Outcomes 3	,data abstraction, methods, method overloading,
Learning Outcomes 4	thinking about and organizing code for natural objects, using classes definitions
Learning Outcomes 5	understanding and practical mastery of object-oriented concepts
9. Teaching and Learning Strategies	
Strategy	1- Explaining the scientific material to students in detail. 2- Students' participation in solving programming problems. 3- Discussion and dialogue about vocabulary related to the topic. 4- Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries. The electronic classroom is also used to give homework assignments and upload answers within the electronic classroom. The classroom is also used to announce exam dates and grades... etc.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 hrs. + 2hrs. lab.		Revision of structured programming	Data show	quiz

			Principles of object programming		
2	2 hrs. + 2hrs. lab.		Functions in C++ and funct overloading Passing parameters by value Passing parameters by reference	Data show	quiz
3	2 hrs. + 2hrs. lab.		classes as data types, Objects, syntax, how to declare objects	Data show	quiz
4	2 hrs. + 2hrs. lab.		***Member functions, Data members*** Access specifiers, public members private members	Data show	quiz
5	2 hrs. + 2hrs. lab.		Accessing of member functions, from within its class, from non-member functions	Data show	quiz
6	2 hrs. + 2hrs. lab.		Arrays of objects (declaration, initialization, processing)	Data show	quiz
7	2 hrs. + 2hrs. lab.		Objects as function arguments	Data show	quiz
8	2 hrs. + 2hrs. lab.		Objects as parameters to member functions	Data show	quiz
9	2 hrs. + 2hrs. lab.		**Objects as parameters to non-member functions**	Data show	quiz
10	2 hrs. + 2hrs. lab.		Objects as parameters to member functions of another class	Data show	quiz
11	2 hrs. + 2hrs. lab.		Objects as returned types with examples	Data show	quiz
12	2 hrs. + 2hrs. lab.		Constructors and destructors Default and parameterized constructors	Data show	quiz

11. Course Evaluation	
60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab.	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	1. **C++ Primer" by Stanley B. Lippman, Josée Lajoie, and Barbara E. Moo** (2012) **2. Effective C++: 55 Specific Ways to Improve Your Programs and Designs" by Scott Meyers** (2005)
Recommended books and references (scientific journals, reports...)	**"Effective Modern C++: 42 Specific Ways to mpr Scott Meyers** (2014)

Data Structures Course Description

1. Course Name:	
Data Structures	
2. Course Code:	
3. Semester / Year:	
1st Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
March/ 21/ 2024	
5. Available Attendance Forms:	
Mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Sarab M. Hameed Email: sarab.m@sc.uobaghdad.edu.iq Name: Mays Mohammed Hoobi Email: mays.m@sc.uobaghdad.edu.iq	
8. Course Objectives	
	Throughout the course, students are expected to Understand the fundamentals of data structures in computer science. Use proper data structures to solve the problem.
9. Teaching and Learning Strategies	
	1. Delivering lectures to introduce and explain essential concepts, principles, and theories related to data structures. This helps students build a strong foundation of knowledge. 2. Giving hands-on programming exercises helps them to apply the learned concepts and implement data structures. This helps their understanding and enhances their programming skills. 3. Providing code walkthroughs and examples demonstrating the implementation and use of various data structures. 4. Conducting problem-solving sessions, both in class and through assignments to allows students to apply data structures to solve problems 5. Encouraging group projects and activities among students. This promotes teamwork and enhances understanding. Regular evaluations and examinations help gauge students' understanding and progress.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
٢-١	٤	Understand the importance and type of data structures	Overview of data structures Primitive & non-primitive Data structures Static & dynamic variables	Data show	Daily quiz
٣	٢	learn how to write an algorithm and	Algorithm definitions, algorithm analysis	Data show	Daily quiz

		compute the complexity of the algorithm in terms of space and time			
٦-٤	٦	The student acquires knowledge about linear data structures such as arrays and stacks, understanding their functionalities, applications, and methods of implementation.	Array data structure, storage allocation, applications Stack data structure Applications of stack data structure: Infix, postfix, and prefix expressions, algorithm to evaluate a postfix expression, and the algorithm to convert an infix expression into a postfix. recursion	PDF PowerPoint	Orel questions Daily quiz
٧	2		exam		
8-11	6	The student learns about linear data structures, such as Queue and their types, operations, applications, and how to implement them.	Queue data structure, definition, basic operations, and types Circular queue, double-ended queue, priority queue, array representation of queue, Priority queue, array representation of queue.	Data show	Daily quiz
12-14	8	The student learns about linear data structures, specifically linked lists, their types, advantages, disadvantages, operations, applications, and how to represent stacks and queues using linked lists	Linked List, types, advantages, disadvantages, operations, application Single linked linear list & and its algorithms Circular linked linear list & its feature	Data show	Daily quiz
15	2		Exam		

11. Course Evaluation
Daily preparation 5%, Daily Quiz 5%, Monthly exam 20%, Assignment 10%, Final exams 60%

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
	1. Yedidyah Langsam, Moshe J. Augenstein, Aaron M. Tenenbaum, , Data Structures using C and C++, Prentice-Hall

	2. Nell Dale, Chip Weems Tim Richards, C++ Plus Data Structures, Jones and Bartlet, Inc. **3.** D.S. Malik, Data Structures Using C++, Second Edition Mark Allen Weiss, Data Structures and Algorithm Analysis in C Addison Wesley**.**
Electronic References, Websites	https://tutorialink.com/ds/ https://www.tutorialspoint.com/data_structures_algorithms/index.htm

Advanced Numerical Analysis Course Description

1. Course Name:	
Advanced Numerical Analysis	
2. Course Code:	
3. Semester / Year:	
2nd Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
21/3/2024	
5. Available Attendance Forms:	
Mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours theoretical and practical / 3 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Najlaa Mohammed Hussein Email: najlaa.alkhafaji@sc.uobaghdad.edu.iq Name: Lecturer Ghusoon Ghazi Mohammed Email: ghusoon.g@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	• Numerical analysis is the study of algorithms for solving mathematical problems using computers by providing numerical methods for solving nonlinear equations, interpolation, and calculus. • Improving the student's skills in numerical methods using numerical analysis programs and computer capabilities. • Develop a basic understanding of the construction of numerical algorithms, their application and how to use them for the numerical solution of problems in science and engineering, such as finding the root, approximating functions, differential equations, and direct and iterative methods in linear algebra. • Learn how to estimate and control errors and study the convergence and stability of numerical algorithms.
9. Teaching and Learning Strategies	
Strategy	1- Explain the scientific material to students in detail. 2- The student's participation in solving mathematical problems. 3- Discussion and dialogue about vocabulary related to the topic. 4- Use the Google classroom to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries. Also, the Google classroom is used to give homework's and upload the answers and announce exam dates and grades... etc.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theore		1. Numerical Linear Algebra 1.1 Linear Systems of Equations.	Explan n usi project and t	Quizz semes exam homew assign
2			1.2 Matrix Notation.		

			1.3 Special Types of Square Matrices. 1.3.1 Symmetric Matrix. 1.3.2 Diagonal Matrix. 1.3.3 Identity Matrix. 1.3.4 Upper Triangular Matrix. 1.3.5 Lower Triangular Matrix. 1.3.6 Banded Matrix.		
3			1.4 Matrix Operating Rules. 1.5 Representing Linear Algebraic Equations in Matrix Form.		
4			1.6 Numerical Methods for Solving Linear System of Equations: 1.6.1 Gauss Elimination Method		
5			1.6.2 LU Decomposition Method.		
6			1.6.3 Vectors and Matrix Norms.		
7			1.6.4 Jacobi's Method.		
8			1.6.5 Gauss-Seidel Method.		
9			2. Interpolation and Polynomial Approximation 2.1 Polynomials.		
10			2.2 Interpolation and the Lagrange Polynomial.		
11			2.3 Newton's Divided Differences.		
12			2.4 Forward Differences.		
13			2.5 Backward Differences.		
14			2.6 Centered Differences.		
15	2		Exam		

11. Course Evaluation	
Midterm exam – 15 score, Quizzes – 5 score, Homeworks – 5 score, Mid laboratory – 15 score. Final exam – 20 score laboratory + 40 score theoretical.	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	1- **"Numerical Methods for Engineers and Scientists Using MATLAB"**, Ramin S. Esfandiari, CRC Press (Taylor & Francis Group), 2nd edition, 2017. 2- **"Numerical Analysis"**, Richard. L. Burden, J. Douglas. Faires and Annette M. Burden, Brooks/Cole, Cengage Learning, 10th edition, 2016. 3- **"Programming with MATLAB for Scientists: A beginner's Introduction"**, Eugeniy E. Mikhailov, CRC Press (Taylor & Francis Group), 2017.
Recommended books and references (scientific journals, reports...)	
Electronic Referenc Websites	

Computer architecture Course Description

1. Course Name:	
Computer architecture	
2. Course Code:	
3. Semester / Year:	
2nd Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
22-3-2024	
5. Available Attendance Forms:	
Theoretical	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours per week\ 2 unites	
7. Course administrator's name (mention all, if more than one name)	
Name: lecturer Qaswaa Khaled abood Email: qaswaa.k@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objective	The topic aims to define the concepts of computer architecture in an expanded manner and focuses on modern microprocessor architectures, identifying the types of memory that make up modern computer architectures, and the methods and reasons for improving the performance of modern computers.
9. Teaching and Learning Strategies	
Strategy	- Explanation on the board and projector. Uploading PDF files of lectures and explanation videos within electronic classes and official department channels.2- Giving multiple examples related to the subject and having the students solve them in class and urging them to compete and solve them quickly.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2\week	**Introduction to computer architecture**		Data show	quiz
2	2\week	**Method for I\O programing**		Data show	quiz
3	2\week	**Programmed I/O tech. soft ware**		Data show	quiz
4	2\week	**Interrupt tech.**		Data show	quiz
5	2\week	**Direct Memory Access (DMA) tech.**		Data show	quiz
6	2\week	**Multiprogramming**		Data show	quiz
7	2\week	**Multiprocessing**		Data show	quiz
8	2\week	**Multicore**		Data show	quiz
9	2\week	**Exam**		Data show	quiz
10	2\week	**Memory system**		Data show	quiz

11	2\week	**Memory hierarchy architecture**		Data show	quiz
12	2\week	Exam		Data show	quiz
13	2\week	Main and cash memory		Data show	quiz
14		Exam		Data show	quiz
15	2\week	Microcode		Data show	quiz

11. Course Evaluation
• Monthly and daily written exams • Daily class attendance and comments • Implementing and completing the required tasks • Final written exam

12. Learning and Teaching Resources	
- Computer Organization and Architecture Designing for Performance, 8th Edition, by William Stallings.	- Computer Organization and Architecture Designing for Performance, 8th Edition, by William Stallings.
Basic Computer Architecture, Smruti R. Sarangi, 2021 Modern Computer Architecture and Organization: Learn X86, ARM, and RISC-V Architectures and the Design of Smartphones, PCs, and Cloud Servers Jim Ledin, 2022.	Basic Computer Architecture, Smruti R. Sarangi, 2021 Modern Computer Architecture and Organization: Learn X86, ARM, and RISC-V Architectures and the Design of Smartphones, PCs, and Cloud Servers Jim Ledin, 2022.
https://www.geeksforgeeks.org/computer-organization-and-architecture. https://electronicsdesk.com/ https://en.wikipedia.org/	https://www.geeksforgeeks.org/computer-organization-and-architecture. https://electronicsdesk.com/ https://en.wikipedia.org/

Object Oriented Programming II Course Description

1. Course Name:	
Object Oriented Programming II	
2. Course Code:	
3. Semester / Year: SECOND Semester/ SECOND	
2nd Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
March/ 21/ 2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
7. Course administrator's name (mention all, if more than one name)	
Name: Dunia Fadheel Saffo Email: dunia.f@sc.uobaghdad.edu.iq Name: Sura Abed Sarab Email: sura.a@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	**Knowledge**
Learning Outcomes 1	Giving some flexibility to objects access restrictions.
Learning Outcomes 2	Reusability feature through the use of inheritance property
Learning Outcomes 3	Classes and objects as dynamic allocated memory locations
Learning Outcomes 4	Treating different classes as objects of a common superclass (Polymorphism)
Learning Outcomes 5	**Implementing Operator overloading feature**
9. Teaching and Learning Strategies	
Strategy	1- Explaining the scientific material to students in detail. 2- Students' participation in solving programming problems. 3- Discussion and dialogue about vocabulary related to the topic. 4- Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries. The electronic classroom is also used to give homework assignme and upload answers within the electronic classroom. The classroom also used to announce exam dates and grades... etc.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 hrs. + 2hrs. lab.		Friendly functions, SYNTAX HOW TO CALL FRIEND FUNCTIONS	Data show	quiz
2	2 hrs. + 2hrs. lab		Members of a class and friend to another class, Non-member functions and friend to many classes, Friend classes	Data show	quiz
3	2 hrs. + 2hrs. lab		Introduction to inheritance, protec access type, differences between priv and protected members	Data show	quiz
4	2 hrs. + 2hrs. lab		Inheritance modes, Private mode Public mode, Protected mode	Data show	quiz
5	2 hrs. + 2hrs. lab		Inheritance types, Single inheritance Hierarchical inheritance	Data show	quiz
6	2 hrs. + 2hrs. lab		**Inheritance types, multi-level type Multiple type**	Data show	quiz
7	2 hrs. + 2hrs. lab		Inheritance types, Hybrid type Diamond problem	Data show	quiz
8	2 hrs. + 2hrs. lab		Solving diamond problem Using scope resolution operator Using virtual inheritance	Data show	quiz
9	2 hrs. + 2hrs. lab		Constructors and destructors within inheritance, Default constructors Parameterized constructors	Data show	quiz
10	2 hrs. + 2hrs. lab		**Pointers,** Pointers to objects	Data show	quiz
11	2 hrs. + 2hrs. lab		**Polymorphism, Binding, Compile time binding, Run time binding Virtual inheritance**	Data show	quiz
12	2 hrs. + 2hrs. lab		Operator overloading	Data show	quiz

11. Course Evaluation

60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1. **C++ Primer" by Stanley B. Lippman, Josée Lajoie, and Barbara E. Moo** (2012) **2. Effective C++: 55 Specific Ways to Improve Your Programs and Designs" by Scott Meyers** (2005)

Recommended books and references (scientific journals, reports...)	**Scientific Researches on Internet**
Electronic References, Websites	

Basic Language Translation Course Description

1. Course Name:	
Basic Language Translation	
2. Course Code:	
3. Semester / Year:	
2nd Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
21/3/2024	
5. Available Attendance Forms:	
Mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours theoretical and practical / 3 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Wejdan Abdul Ameer Hassan Email: wijdan.a@sc.uobaghdad.edu.iq Name: Zainab Jawed Ahmed Email: Zainab,jawad@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	• Compilers play a vital role in the design and implementation of programming languages. By studying compilers, the students gain insights into how programming languages are structured, how syntax and semantics are defined, and how languages are transformed into executable code. • Understanding the principles and techniques used by compilers allows programmers to write code that can be optimized effectively, resulting in faster and more efficient programs. • Compiler course cover topics such as lexical analysis, parsing, and semantic analysis. These concepts are crucial for understanding how compilers detect and report errors in source code. • Compilers employ a range of optimization techniques to improve the performance of programs. By studying compilers, the students learn these optimization strategies and apply them in code, making it run faster and consume fewer resources. • Understanding Program Execution.
9. Teaching and Learning Strategies	
Strategy	1- Explain the scientific material to students in detail. 2- The student's participation in solving mathematical problems. 3- Discussion and dialogue about vocabulary related to the topic. 4- Use the Google classroom to upload lectures in the form of PDF files, where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries. Also, the Google classroom is used to give homework's and upload the answers and announce exam dates and grades... etc.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical + 2 Laboratory		-Language Processing System - Programming Languages - Translator	Explanation using projectors and the blackboard, as well as discussions and questions	Quizzes, semester exams, homework assignments and the final exam.
2			- Introduction to compiler - phases of compiler		
3			- Lexical Analysis(scanner) - Recognition of token - Lexical Error - Symbol table		
4			- Syntax analyzer(parser) - Syntax error handling - Strategies of error recovery		
5			- Context free grammar, parse tree - Ambiguity, Left Recursion, and - Left Factoring		
6			- Top-down parsing - Predictive parsing		
7			- Bottom-up parsing, - Shift reduce parsing		
8			-LR Parsing		
9			- Semantic analysis - Type system		
10			-Intermediate code Generation (IR)		
11			-Implementation of three address code		
12			-Code Optimization		
13			-Code Optimization Methods		
14			-Code Generation		
15	2		-Exam		

11. Course Evaluation

1- Midterm exam – 15 score.
2- Quizzes – 5 score.
3- Homeworks – 5 score.
4- Mid laboratory – 15 score.
5- Final exam – 20 score laboratory + 40 score theoretical.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1-Compilers Principles, Techniques, & Tools by Alfred V. Aho, 1986. 2- The design and construction of compilers by JOHN WILEY & SONS,1981. 3- Compilers Principles, Techniques, & Tools by Alfred V. Aho, 2016.
Recommended books and	

references (scientific journals, reports...)	
Electronic References, Websites	Many References from websites

Data Structures and Algorithms Course Description

1. Course Name:	
Data Structures and Algorithms	
2. Course Code:	
3. Semester / Year:	
2nd Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
22/3/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Units = 4, credit hours = 60	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Nasreen Jawad Email: nasreen.kadhim@sc.uobaghdad.edu.iq Name: Dr. Tareq Zaid Email: tarik.z@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	1- Understanding data structures and algorithms and measure its efficiency and its complexity and understanding its application. 2- Solving current problems in community or in working market using them. 3- Dealing with scientific and application problems and put solutions to them.
9. Teaching and Learning Strategies	
Strategy	1- Giving lectures to introduce and explain basic concepts and principles relatec data structures and algorithms. This helps the student build a strong foundatior knowledge 2. Giving practical programming exercises helps them apply the concepts they h learned and implement data structures. This helps them understand and enhan their programming skills 3. Provide code instructions and examples that illustrate the implementation and of various data structures 4. Conduct problem-solving sessions, either in class or through assignments, allow the student to apply data structures to solve problems 5. Encouraging group projects and activities among students. This promc teamwork and promotes understanding. 6. Regular assessments and exams help measure student understanding progress. These can include tests, assignments and examinations that ass theoretical knowledge and practical application

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		1. Non-Linear Data Structures		

2	2		2. Tree Data Structure 3. Binary Trees 4. Binary Tree Traversal and Representation 5. Binary Tree Applications 6. Binary Tree Operations and Algorithms 7. Graph Data Structure 8. Sorting Algorithms: Classificati Objectives and Programmer considerations. 9. Sorting Algorithms: Selection s Bubble sort and Insertion sort. 10. Sorting Algorithms: Bin sort, Radix sort and Merge sort. 11. Sorting Algorithms: Quick sort, Shell sort and Tree sort. 12. Complexity of Sorting Algorith 13. Searching Algorithms: Sequent search and Binary search. 14. Hashing algorithms 15. Complexity of Searching Algorithms. 16. **Preparatory week before the final Exam**		
3	2				
4	2				
5	2				
6	2				
7	2				
8	2				
9	2				
10	2				
11	2				
12	2				
13	2				
14	2				
15	2				
16	2				

11. Course Evaluation

Daily preparation 5%
Daily Quiz 5%
Monthly exam 20%
Assignment 10%
Final exams 60%

12. Learning and Teaching Resources

1. Mark Allen Weiss (2014). Data Structures and Algorithm Analysis in C++. Fourth Edition. Addison-Wesley Publishing Company.
2. Kent D. Lee and Steve Hubbard (2015). Data

Structures and Algorithms with Python. Springer International Publishing Switzerland.
3. Rance D. Necaise (2011). Data Structures and Algorithms Using Python. John Wiley & Sons, Inc.

Programming Language Techniques Course Description

1. Course Name:	
Programming Language Techniques	
2. Course Code:	
3. Semester / Year:	
2nd Semester/ 2nd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
22/3/2024	
5. Available Attendance Forms:	
In person	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4 credit hours / 4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Maysa Ibrahim Abdulhussain Email: Maysaa.i@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	**Learn about the HTML,CSS and AS?P.NET** **● Learn the basics of Web development** **● Identify the libraries provided by language** **● Design and implement graphical u interfaces that respond to events**
9. Teaching and Learning Strategies	
Strategy	Providing the student with the basics of the topics - Discussions and problem solv during the lecture - Asking intellectual questions, such as why and how - Giv assignments

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٤	**Web Design Basics**	**Web Design Basics**	**Lectures**	**Midterm exam Daily evaluations**
٢	٤	**Introduction to HTML**	**Introduction to HTML**	**Lectures**	**Midterm exam Daily evaluations**
٣	٤	**HTML elements**	**HTML elements**	**Lectures**	**Midterm exam Daily evaluations**
٤	٤	**ASP.Net Basics**	**ASP.Net Basics**	**Lectures**	**Midterm exam Daily evaluations**
٥	٤	**ASP.Net Lifecycle and Lifecycle events**	**ASP.Net Lifecycle and Lifecycle events**	**Lectures**	**Midterm exam Daily evaluations**
٦	٤	**State Management techniques of ASP.Net**	**State Management techniques of ASP.Net**	**Lectures**	**Midterm exam Daily evaluations**
٧	٤	**Session, Cookies, Hidden Fields**	**Session, Cookies, Hidden Fields**	**Lectures**	**Midterm exam Daily evaluations**
٨	٤	**Server Side Controls**	**Server-Side Controls**	**Lectures**	**Midterm exam Daily evaluations**

٩	٤	**Web Forms and common Controls**	**Web Forms and common Controls**	**Lectures**	**Midterm exam Daily evaluations**
١٠	٤	**Page events**	**Page events**	**Lectures**	**Midterm exam Daily evaluations**
١١	٤	**Menus**	**Menus**	**Lectures**	**Midterm exam Daily evaluations**
١٢	٤	**Connecting ASP with SQL**	**Connecting ASP with SQL**	**Lectures**	**Midterm exam Daily evaluations**
١٣	٤	**Data Controls**	**Data Controls**	**Lectures**	**Midterm exam Daily evaluations**
١٤	٤	**Master Details Pages**	**Master Details Pages**	**Lectures**	**Midterm exam Daily evaluations**

Course Evaluation	
Monthly exams, Preparing reports, Laboratory evaluation	
11. Learning and Teaching Resources	
Required textbooks (curricular books, any)	*Mastering Microsoft C# 2010, 1st Edition by Evangelos Petroutsos, 2010*
Recommended books and references (scientific journals, reports...)	*Beginning ASP.NET3.5 in C#2008 by Matthew Macdonald* *Online lectures and YouTube lessons.*
Electronic References, Websites	

Third Grade

Introduction to AI Course Description

1. Course Name:
Introduction to AI
2. Course Code:
3. Semester / Year:
1st Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
01-09-2024
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
4/3
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Dr. Rawaa Dawoud Al-Dabbagh Email: rawaa.hassan @sc.uobaghdad.edu.iq Name: Dr. Dhuha Abdulhadi Abduljabbar Email: dhuha.abd@sc.uobaghdad.edu.iq
8. Course Objectives

Course Objectives	• Provide an overview of fundamental AI concepts, including machine learning, natural language processing, robotics, expert systems, and more. • Explore various AI algorithms and techniques, such as search algorithms, knowledge representation, and optimization methods. • Familiarize students with AI programming languages (e.g., Python) and tools commonly used in AI development. Provide hands-on experience in implementing AI algorithms. • Develop problem-solving skills in the context of AI applications. Encourage students to analyze real-world problems and devise AI-based solutions.

9. Teaching and Learning Strategies

Strategy	**1.** Lectures: Traditional lectures can be used to introduce foundational concepts, theories, and algorithms in AI. Lectures can incorporate visual aids, examples, and case studies to enhance understanding. **2.** Practical Coding Assignments: Assigning coding assignments that involve implementing AI algorithms and techniques allows students to gain hands-on experience. They can work with programming languages such as Python. **3.** Group Projects: Encouraging students to work in groups on AI projects promotes collaboration, problem-solving, and teamwork. Projects can involve tasks like developing a chatbot, building a recommendation system, or designing an image recognition system. **4.** Case Studies: Analyzing real-world case studies that demonstrate the application of AI techniques in various domains (e.g., healthcare, finance, or transportation) helps students understand practical challenges and ethical considerations.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	٢		**Introduction to AI** • Definition and history of AI. • Types of AI: Narrow AI vs. General AI. • Applications of AI in various domains.		
٢	٢		**Problem-Solving Concepts** • Definition of problems and states. • Problem-solving agents. • Breadth-First Search (BFS) algorithm: principles and applications.		
٣	٢		**Depth-First Search and Uniform Cost Search** • Depth-First Search (DFS) algorithm. • Uniform Cost Search (UCS) for optimal pathfinding. • Comparing BFS, DFS, and UCS.		
٤	٢		**Heuristic Functions and Greedy Best-First Search** • Introduction to heuristic functions. • Greedy Best-First Search algorithm. • Applications and limitations of Greedy Search.		
٥	٢		**A* Search Algorithm** • Overview of A* Search. • Admissibility and consistency of A* heuristic. • Optimality of A* and its applications.		
٦	٢		**Adversarial Search** • Introduction to adversarial search. • Minimax algorithm: principles and implementation. • Hands-on session: Simulating and visualizing adversarial games.		

٧	٢		**Alpha-Beta Pruning** • Understanding Alpha-Beta Pruning for optimization. • Implementation of Alpha-Beta Pruning in adversarial search. • Comparing the performance of Minimax with and without Alpha-Beta Pruning.		
٨	٢		**Comparison and Evaluation** • Comparing uninformed and informed search algorithms. • Real-world applications and case studies.		
٩	٢		**Basics of Knowledge Representation** • Role of knowledge representation in AI. • Semantic Networks and their applications. • Introduction to Frames.		
١٠	٢		**First-Order Logic** • Syntax and semantics of First-Order Logic. • Representing knowledge using logic. • Rule-based systems.		
١١	٢		**Ontologies and Semantic Web** • Understanding ontologies. • Introduction to RDF (Resource Description Framework). • Overview of OWL (Web Ontology Language).		
١٢	٢		**AI Project Kickoff** • Overview of the AI project. • Selecting a problem domain. • Planning and scoping the project.		
١٣	٢		**Practical Implementation of Search Algorithms** • Hands-on session: Implementing search algorithms in Python. • Debugging and optimizing code. • Integrating search algorithms into the project.		

١٤	٢		**Ethical Considerations in AI** • Importance of ethics in AI. • Ethical guidelines and responsible AI development. • Group discussions on ethical dilemmas.		
١٥	٢		**Final Project Presentation** • Project presentations. • Reflective essays on project experiences.		
١٦	٢		**Preparatory week before the final exam**		
Course Structure (Practical Part)					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
١	٢		**Python Basics and Setup** • Introduction to Python programming. • Setting up the Python environment for AI development. • Basic Python syntax, data types, and control structures.		
٢	٢		**AI Lab Orientation** • Overview of the AI Lab projects. • Introduction to tools and resources for AI development. • Collaborative tools setup.		
٣	٢		**Implementing Breadth-First Search (BFS)** • Understanding BFS algorithm. • Hands-on: Coding BFS in Python.		
٤	٢		**Depth-First Search (DFS) and Uniform Cost Search (UCS)** • Practical implementation of DFS and UCS. • Debugging and optimizing search algorithms in Python.		
٥	٢		**Greedy Best-First Search Implementation** • Principles of Greedy Best-First Search. • Coding exercise: Implementing Greedy		

			Search in Python.		
٦	٢		**Implementing A* Search Algorithm** • Overview of A* algorithm. • Hands-on: Coding A* Search in Python.		
٧	٢		**Minimax Algorithm** • Introduction to adversarial search. • Minimax algorithm: principles and implementation in Python.		
٨	٢		**Alpha-Beta Pruning** • Understanding Alpha-Beta Pruning for optimization. • Implementation of Alpha-Beta Pruning in adversarial search. • Practical coding exercises and application in board games.		
٩	٢		**Advanced Topics in Adversarial Search** • Extensions and variations of adversarial search algorithms. • Practical coding exercises exploring variations in game scenarios.		
١٠	٢		**Implementing Semantic Networks and Frames** • Hands-on: Coding semantic networks and frames in Python. • Practical applications and case studies.		
١١	٢		**First-Order Logic in Python** • Representing knowledge using First-Order Logic. • Coding exercises for rule-based systems.		
١٢	٢		**Group Project Kickoff** • Defining the project scope. • Initial planning and task distribution.		
١٣	٢		**Project Work** • Hands-on coding sessions for the group project.		

			• Group discussions and consultations.		
١٤	٢		**Project Presentations and Reviews** • Group presentations of final projects.		
١٥	٢		• **Q&A sessions and peer reviews.**		
١٦	٢		**Preparatory Week before the Final Exam**		

11. Course Evaluation	
Distributing the score out of ٤٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12. Learning and Teaching Resources	
Required textbo (curricular books, if an	
Main references (sourc	Nilsson, N. J. (1998). *Artificial intelligence: Structures and strategies for complex problem solving* (5th ed.). Pearson. Russell, S., & Norvig, P. (2010). *Artificial intelligence: A modern approach* (3rd ed.). Pearson. Poole, D. L., & Mackworth, A. K. (2017). *Artificial Intelligen Foundations of Computational Agents*. Cambridge University Press.
Recommended books and references (scientific journals, reports...)	Mitchell, M. (2019). *Artificial intelligence: A guide for thinking huma* Farrar, Straus and Giroux.
Electronic Referenc Websites	**Coursera AI Courses (https://www.coursera.org/courses?query=artificial%20intelligence)**

Computer Graphics Course Description

1. Course Name:	
Computer Graphics	
2. Course Code:	
3. Semester / Year:	
1st Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
21-3-2024	
5. Available Attendance Forms:	
Class attendance system	
6. Number of Credit Hours (Total) / Number of Units (Total)	
٤/٣	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Suhaila Najim Mohammed Email: suhailan.mo@sc.uobaghdad.edu.iq Name: Dr. Huda M. Radha Email: huda.rada@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	The main objective of this course is to introduce students the fundamental concepts in computer graphics including a range of computer graphics techniques and algorithms covering 2D graphics. It focuses on key algorithmic techniques, mathematical and programmatic foundations of computer graphics, including modeling and animating 2D and. Topics include digital image representation, two- dimensional shape representations (e.g. Lines, circles, and curves), geometrical transformations (e.g. rotations, scales, translations, reflection, shearing and combined transformation), the rasterization pipeline, ray tracing & visual perception.
9. Teaching and Learning Strategies	
Strategy	1. Delivering lectures to introduce and explain essential concepts, principles, and theories related to computer graphics. This helps students build a strong foundation of knowledge. 2. Giving hands-on programming exercises helps them to apply the learned concepts and implement 2D graphics. This helps their understanding and enhances their programming skills. 3. Providing code walkthroughs and examples demonstrating the modeling of 2D scenes. 4. Conducting problem-solving sessions, both in class and through assignments to allows students to use graphics primitives and transformations for objects modeling and rendering. 5. Encouraging group projects and activities among students. This promotes teamwork and enhances understanding. 6. Regular evaluations and examinations help gauge students' understanding and progress. These can include quizzes, assignments, and exams that assess theoretical knowledge and practical application of computer graphics. 7. Recommending textbooks, internet resources, and supplementary references might help students study more effectively.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Introduction to computer graphics	Introduction to the C# programming language environment and the tools it provides for dealing with computer graphics	Data show	quiz
2	4	Understanding the human visual system, computer image representation, color models, display devices, vector graphics, raster graphics, basic terms related to display devices.	Dealing with geometric shapes (point, line, and rectangle)	Data show	quiz
3	4	Understanding 2D graphics, graphics output primitives, basic geometric shapes, desired properties of line drawing algorithms, DDA line drawing algorithm	Dealing with geometric shapes (circle, arc, polygon, and curve)	Data show	quiz
4	4	Understanding line drawing algorithms (Bresenham line drawing algorithm and Mid-Point algorithm)	Modeling some 2D shapes (such as cube and grid)	Data show	quiz
5	4	Understanding circle drawing algorithms, circle properties, polar coordinate method, and circle symmetry property	Modeling some scenes (such as a smiling face, and drawing birds)	Data show	quiz
6	4	Understanding circle drawing algorithms (Bresenham circle drawing algorithm and Mid-Point algorithm)	Programming line drawing algorithms	Data show	quiz
7	4	Curve definition, Bezier curves, types of Bezier curves (linear Bezier curves, quadratic Bezier curves, cubic Bezier curves), applications of curves	Programming circle drawing algorithms	Data show	quiz
8	4	Understanding basic 2D transformations (translate, scale, and shear)	Programming methods for drawing curved shapes	Data show	quiz
9	4	Understanding basic 2D transformations (reflection, rotation, composition, and affine transformations)	Dealing with basic 2D transformations	Data show	quiz
10	4	Introducing the concepts of 2D views (cuts, point cuts, and line	Modeling some complex	Data show	quiz

		cuts)	geometric shapes using translation, scaling, rotation and reflection		
11	4	Building hierarchical modeling of complex objects, scene diagrams, and transformation stacks	Modeling some scenes using basic transformations (such as drawing a butterfly)	Data show	quiz
12	4	Introducing the concepts of three-dimensional views, parallel projection, perspective projection, and depth determination	Introduction to OpenGL	Data show	quiz
13	4	Understanding polygon representation of objects, meshes and surfaces	Drawing a 3D shape using OpenGL	Data show	quiz
14	4	Understanding basic 3D transformations (move, rotate, scale, reflect, shearing, and compound transformations	Dealing with basic 3D transformations	Data show	quiz
15	4	Mid-Exam	Mid-Exam + display of projects completed by students	Data show	quiz

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1) "Fundamentals of Computer Graphics", S. Marschner, and P. Shirley, CRC Press (A K Peters), 2021. 2) "Computer Graphics: Principles and Practice", J. F. Hughes, A. V. Dam, M. McGuire, D. F. Sklar, J. D. Foley, S. K. Feiner, and K. Akeley, Addison-Wesley (Pearson Education), 2014.
Main references (sources)	1. Steve Marschner and Pete Shirley. Fundamentals of Computer Graphics. A K Peters, 2021. 2. John F. Hughes, Andries van Dam, Morgan McGuire, David F. Sklar, James D. Foley, Steven K. Feiner, and Kurt Akeley. Computer Graphics: Principles and Practice. 2014.
Recommended books and references (scientific journals, reports...)	1) "Introduction to Computer Graphics". F. Klawonn, Springer-Verlag London, 2nd Edition, 2012. 2) "OpenGL Programming Guide", Addison-Wesley (Pear Education), D. Shreiner, G. Sellers, J. Kessenich, B. Licea-Kane, Edition, 2013.
Electronic References, Websites	1) https://www.coursera.org/learn/interactive-computer-graphics 2) https://www.sciencedirect.com/journal/computers-and-graphics 3) https://www.frontiersin.org/journals/computer-science/sections/computer-graphics-and-visualization

Course Description Form

1. Course Name:	
Database fundamentals	
2. Course Code:	
3. Semester / Year:	
1st Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
3/2024	
5. Available Attendance Forms:	
Attendance time	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Mehdi G. Duaimi Email: mehdi.k@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	Defining and explaining fundamental of database concepts. Designing a database schema. Executing SQL statements for data retrieval and manipulation. Understanding the role of databases in applications. Performing data modeling and schema design. Optimizing query performance.
9. Teaching and Learning Strategies	
Strategy	Instructors aim to consolidate active learning and critical thinking by engaging students in practical activities such as designing database schemas, writing SQL queries, and solving real-world database challenges. The strategy encourages collaboration, independent problem-solving, and the use of technology tools to enhance the learning experience. This will be achieved through classes, interactive tutorials and by considering types of various lab. assignments; involving some activities that are interesting to the students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understand fundamental database principles.	Database System Concepts	Lectures	Exams (various types) Student feedback
2	4	Comprehend database system components.	Database Architecture	- Lectures - Reports and studies	Exams (various types) Assessment of reports and studies.
3	4	Know the role and functions of	Database Management	Lectures.	Exams (various types)

		DBMS.	System		
4	4	Learn about database structure and user roles.	Database Schema & Database Users	Lectures. Exams (various types). Group work	Student feedback. Workshops. Assessment of reports and studies
5	4	Model real-world entities and relationships.	The Entity Relationship Data Model	Lectures. Exams (various types). Group work	Student feedback. Workshops. Learning matrix
6	4	Ensure data quality & Applying advanced E-R modeling and business rules.	Relational Integrity & The Enhanced E-R Model and Business Rules	Lectures	Exams (various types). Learning matrix
7	4	Design databases using the ER model.	Conceptual Design with the ER Model	Lectures. Exams (various types). Group work	Student feedback 3. Workshops | 4. Reports and studies |
8	4	Master SQL for data retrieval and manipulation.	Queries and Updates in SQL	Lectures. Group work	Exams (various types). Learning matrix
9	4	Understand the basics of relational databases.	The Relational Data Model	Lectures. Group work Workshops Reports and studies	Exams (various types). Student feedback. Assessment of reports and studies
10	4	Convert ER diagrams to relational schemas.	Mapping from ER Diagrams to Relational Model	Lectures.	Exams (various types). Student feedback
11	4	Explore advanced SQL and DBMS features.	SQL and DBMS Functionality	Lectures.	Exams (various types) Student feedback Learning matrix
12	4	Define and apply data integrity constraints.	Constraints and Keys	Lectures. Group work	Exams (various types). Student feedback
13	4	Create relation schemas in SQL.	Defining a Relation Schema in SQL	Lectures. Reports and studies	Exams (various types). . Assessment of reports and studies
14	4	Model data hierarchies effectively.	DBMS Generalization & Specialization	Lectures. Workshops	Exams (various types) Student feedback Learning matrix
15	4	Understand relational algebra	Relational Algebra Syntax and	Lectures.	Exams (various types). Student

		for querying data.	Semantics		feedback

Lab Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1		Introduction to Database System	Discussions Seminars Lectures HomeWorks Reports	Quizzes Semester e Final Exan
2	1		Importing and Linking Information from an External Source		
3	1		Creating and working with Tables		
4	1		Data Types and Table Properties		
5	1		Field Properties		
6	1		Formatting Fields		
7	1		Sorting and Filtering		
8	1		Creating Relationship and Referential Integrity		
9	1		Introduction to SQL and Query types		
10	1		Creating and working with Queries (QBE)		
11	1		DDL: Part I		
12	1		DDL: Part II		
13	1		DML: Select Query		
14	1		Action Queries		
15	1		Exam		

Course Evaluation

60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab.

Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1- Kroenke, D. M., Auer, D. J., Vandenberg, S. L., & Yoder, R. C. (2018). Database Processing. Fundamentals, Design, and Implementation 2- Alexander, M., & Kusleika, R. (2019). Access Bible. John Wiley & Sons.
Recommended books and references (scientific journals, reports…)	Books and research papers from Scopus and WoS databases.
Electronic References, Websites	

11. Course Evaluation

Quizzes 5, Assignments 5, Lab. 10, Projects 5, Midterm Exam 25, Final Exam 50

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems", 4th Edition, McGraw Hill, 2018. S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Datab Management Systems", Springer, 2007.
Main references (sources)	David M. Kroenke, David J. Auer. "Database processing: fundamentals, design, and implementation."—Edition 15, Pearson Education, Prentice Hall. 2018. Mike McGrath. 'Access in easy steps: Illustrated using Acc 2019 Paperback. In Easy Steps Limited (2019).
Recommended books and references (scientific journals, reports...)	https://www.inderscience.com/jhome.php?jcode=ijiids https://dl.acm.org/journal/tods
Electronic References, Websites	https://www.inderscience.com/jhome.php?jcode=ijiids https://www.sciencedirect.com/topics/immunology-and-microbiology/database-management-system

English Language III Course Description

1. Course Name:
English Language III
2. Course Code:
UOB23118
3. Semester / Year:
1st Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
24/3/2024
5. Available Attendance Forms:
In person - In classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
2
7. Course administrator's name (mention all, if more than one name)
Name: Zainab Raed Ahmed Email: zainab.raid@sc.uobaghdad.edu.iq
8. Course Objectives
1. To develop students' language skills in English, focusing on the intermediate level. 2. To enhance students' ability to communicate effectively and confidently in various everyday situations. 3. To expand students' vocabulary and understanding of grammar structures. 4. To promote cultural awareness and understanding through authentic texts and materials. 5. To provide a solid foundation for further language learning and progression.
9. Teaching and Learning Strategies
1. Communicative Approach: Emphasize communicative activities that promote interaction among students. Encourage pair and group work, role-plays, and discussions to practice language skills in meaningful contexts. 2. Integrated Skills: Integrate the four language skills (speaking, listening, reading, and writing) in lessons to create a balanced approach to language learning. Provide opportunities for students to use and develop these skills simultaneously. 3. Vocabulary Expansion: Incorporate vocabulary-building exercises and activities throughout the course. Use real-life contexts, visuals, and practical examples to help students learn and remember new words. 4. Grammar Focus: Teach and reinforce grammar structures in a systematic and progressive manner. Provide clear explanations, examples, and practice exercises to ensure students understand and can apply the grammar rules correctly. 5. Authentic Materials: Include authentic texts, such as articles, newspaper clippings, songs, and videos, to expose students to real-world language usage. This helps develop their reading and listening comprehension skills and exposes them to cultural aspects of English-speaking countries. 6. Cultural Awareness: Integrate cultural topics and discussions into the lessons to foster cultural awareness and sensitivity. Encourage students to share their own cultural backgrounds and experiences to promote understanding and appreciation of diverse perspectives. 7. Error Correction: Provide constructive feedback and error correction during speaking and

writing activities. Help students identify and correct their mistakes, focusing on accuracy while encouraging fluency and self-expression.

8. Technology Integration: Utilize technology tools, such as interactive whiteboards, online resources, and language learning apps, to engage students and enhance their language learning experience. Incorporate multimedia materials for listening and speaking practice.
9. Regular Assessment: Assess students' progress regularly through quizzes, tests, and assignments. Provide timely feedback to guide their learning and address areas that need improvement.
10. Individualization: Cater to the individual needs and learning styles of students. Offer differentiated tasks and activities to ensure all learners are appropriately challenged and supported.
11. Cooperative Learning: Promote collaboration and teamwork among students through pair work, group projects, and peer feedback. This encourages active participation and a supportive learning environment.
12. Review and Revision: Schedule regular review sessions to consolidate previously learned material. Encourage students to revise and practice independently, providing resources for self-study and additional practice.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Naming tenses Present, Past, Present Perfect Auxiliary verbs	A world of difference	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
2	2	Present tenses Simple and contiuous	The working week	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
3	2	Past tenses Simple and continuous	Good times, bad times	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
4	2	Advice, obligation, and permission Modal and related verbs	Getting it right	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
5	2	Future forms Will, going to, or Present Contint1ous?	Our changing world	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
6	2	Information	What matters to me	Lecture	Either quiz

		questions, Adjectives		in Classroom	(Listening, reading, grammar, vocabulary), or writing assignment
7	Midterm Exam				
8	2	Present Perfect Simple and continuous	Passions and fashions	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
9	2	Verb patterns idioms	No fear	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
10	2	Conditionals Second & Third conditionals	It depends how you look at it	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
11	2	Noun phrases Possessives	All things high tech	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
12	2	Modals of probability Phrasal verbs	Seeing is believing	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
١3	2	Reported speech	Telling it how it is	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
١4	2	Revision week			
15	Final exam				

11. Course Evaluation
Listening quiz (10%)+Reading quiz (10%)+ writing assignment (10%)+ Grammar & Vocabulary quiz (10%)= 40 % + 60% final exam

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Soars, John and Liz, (2011), New Headway Plus, Special Edition, Intermediate Level, Oxford University Press
Main references (sources)	New Headway Plus provides an integrated skills course with each unit divided into grammar, vocabulary, skills work and everyday English segments
Recommended books and references (scientific	Oxford University Press: The New Headway

journals, reports...)	series is published by Oxford University Press. Visit their website at www.oup.com and search for "New Headway Plus, Special Edition, Intermediate" or browse their English language teaching section for information on the course.
Electronic References, Websites	https://elt.oup.com/student/headway/beg/?cc=gl l&selLanguage=en

Advance Computer Architecture Course Description

1. Course Name:	
Advance Computer Architecture	
2. Course Code:	
3. Semester / Year:	
1st Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
22/03/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Credit Hours (Total) is 30 / 2 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Lecturer: Nahlah Abdulrahman Alkhalidi Email: nahlah.a@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	1- Understand and understand computers and solve existing problems in society or in the labor market. 2- Dealing with scientific and applied problems and developing solutions to them. **3-** Understanding computer methods and techniques in solving the problems of scientific and economic institutions.
9. Teaching and Learning Strategies	
Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction to computer architecture		- Short exams Quarterly and final. - Homework assignments. - Discussion sessions - Presentations for students. - Making posters.
2	2		Processor and its architecture		
3	2		Intel 80x86 Base Architecture		
4	2		Intel 80386 MP architecture		
5&6	2		Instruction Pipelining		
7	2		Intel 80386 MP Processing Modes		
8	2		Intel 80486 MP architecture		

9 &10	2		Intel Pentium Processor		
11	2		Memory Subsystem The Fetch/Decode Unit		
12	2		Instruction Set Architecture Features		
13	2		MMX™ Technology Instructions		
14 & 15	2		Intel Pentium III Processor		

11. Course Evaluation	
Distribution of the degree out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Computer Organization and Architecture Designing for Performance, 8th Edition, by William Stallings.
Main references (sources)	Basic Computer Architecture, Smruti R. Sarangi, 2021 Modern Computer Architecture and Organization: Learn X86, ARM, and RISC-V Architectures and the Design of Smartphones, PCs, and Cloud Servers وJim Ledin, 2022.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	- https://www.geeksforgeeks.org/computer-organization-and-architecture. - https://electronicsdesk.com/ - https://en.wikipedia.org/

Programming with Java Course Description

1. Course Name:
Programming with Java
2. Course Code:
3. Semester / Year:
2023/2024
4. Description Preparation Date:
22/3/2024
5. Available Attendance Forms:
In person
6. Number of Credit Hours (Total) / Number of Units (Total)
3 credit hours / 2 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr Haneen Ahmed
Email: haneen.a@sc.uobaghdad.edu.iq
8. Course Objectives

Course Objectives
- **Learn about the Java programming method and its capabilities**
- **Learn the basics of the Java language**
- **Identify the libraries provided by the language**
- **Design and implement graphical user interfaces that respond to events**
- **Dealing with files**

9. Teaching and Learning Strategies

Strategy
- Providing the student with the basics of the topics
- Discussions and problem solving during the lecture
- Asking intellectual questions, such as why and how
- Giving assignments

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1 theoretical + 2 practical	Introduction to java Programming	Introduction to java Programming	lectures	Midterm exam Daily evaluations
2	1 theoretical + 2 practical	Java Fundamentals	Java Fundamentals	lectures	Midterm exam Daily evaluations
3	1 theoretical + 2 practical	Principles of object-oriented programming	Principles of object-oriented programming	lectures	Midterm exam Daily evaluations
4	1 theoretical + 2 practical	Introducing Classes, Objects, and Methods	Introducing Classes, Objects, and Methods	lectures	Midterm exam Daily evaluations
5	1 theoretical + 2 practical	GUIs in Java	GUIs in Java	lectures	Midterm exam Daily evaluations
6	1 theoretical	Java AWT	Java AWT	lectures	Midterm exam

	+ 2 practical	Java Swing toolkit and widgets	Java Swing toolkit and widgets		Daily evaluations
7	1 theoretical + 2 practical	GUI Components	GUI Components	lectures	Midterm exam Daily evaluations
8	1 theoretical + 2 practical	Exam	Exam	lectures	Midterm exam Daily evaluations
9	1 theoretical + 2 practical	Exception Handling	Exception Handling	lectures	Midterm exam Daily evaluations
10	1 theoretical + 2 practical	Input/output and files	Input/output and files	lectures	Midterm exam Daily evaluations
11	1 theoretical + 2 practical	Input/output and files	Input/output and files	lectures	Midterm exam Daily evaluations
12	1 theoretical + 2 practical	Java Collections	Java Collections	lectures	Midterm exam Daily evaluations
13	1 theoretical + 2 practical	Random number	Random number	lectures	Midterm exam Daily evaluations
14	1 theoretical + 2 practical	Introduction client server programming	Introduction client server programming	lectures	Midterm exam Daily evaluations
15	1 theoretical + 2 practical	Network programming	Network programming	lectures	Midterm exam Daily evaluations

11. Course Evaluation
- Monthly exams
- Preparing reports
- Laboratory evaluation

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Cay S. Horstmann, **Core Java Volume I – Fundamentals**, 11th Edition, Prentice Hall Herbert Schildt, **Java - The Complete Reference**, 11th Edition, McGraw Hill Education
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://www.tutorialspoint.com/java http://docs.oracle.com/javase/tutorial/java http://java.sun.com/docs/books/tutorial/index.html

Software engineering Course Description

1. Course Name:	
Software engineering	
2. Course Code: CSC35129	
3. Semester / Year: Semester	
1st Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
23/03/2024	
5. Available Attendance Forms: In person	
6. Number of Credit Hours (Total) / Number of Units (Total):	
30 Hours	
7. Course administrator's name (mention all, if more than one name)	
Name: 1- Dr. Faten Abed Ali Dawood Email: faten.dawood@sc.uobaghdad.edu.iq Name: 2- Dr. Safaa Khalil Mortada Email: safaa.alwajidi@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	• **Helping students to gain a broad understanding of software engineering applications by analyzing requirements to design and implement the software product according to recognized standard specifications.** • **Developing skills that enable students to analyze and design high-quality software systems with good reliability that meet the requirements of the labor market.**
9. Teaching and Learning Strategies	
Strategy	1- Theoretical and practical lectures using modern presentation techniques and students' participation in scientific discussions through brainstorming to obtain the required conclusions that enhance the student's broad understanding of the lecture. 2- Students' participation in solving programming problems that occur during the design and implementation of the applied software system. 3- Discussion and dialogue about vocabulary related to the topic. 4- Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where they are explained in detail in the lecture, with many examples solved, discussed with students, and their questions answered. The electronic classroom is also used to give homework assignments, upload answers within the electronic classroom, and also announce exam dates and grades...etc.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand the methods and how to apply them	Introduction to Software Engineering	In person	1-Questions and answers, 2- Quiz , Homework assignments
2	2	==========	Software Process	=======	==========

3	2		Types of requirements (User & System)		
4	2		Requirements engineering process		
5	2		Functional & Non-Functional Requirements		
6	2		Software Development -Process Models		
7	2		The Waterfall Model		
8	2		V-shaped model		
9	2		Evolutionary Development Model		
10	2		Incremental Model lifecycle		
11	2		Spiral Model life cycle		
12	2		Software Analysis & Design - Data Flow Diagram		
13	2		Software Testing		
14	2		Team- Work Presentation- I		
15	2		Team- Work Presentation- II		

11. Course Evaluation		
Quizzes	3	5% (5)
Assignments	2	10% (10)
Projects	1	10% (10)
Report	1	5% (5)
Midterm Exam	2hr	20% (20)
Final Exam	3hr	50% (50)

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	1- Software Engineering, 10th Edition by Ian Sommerville, 2016 2- Software Engineering: A Practitioner's Approach, 8th Edition by Roger S. Pressman, Bruce Maxim, 2015 3- Introduction to Software Engineering, 2nd Edition by Ronald J. Leach, 2016
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	1- https://www.tutorialspoint.com/software_engineering/index.htm 2- https://www.geeksforgeeks.org/software-engineering-introduction-to-software-engineering

Web organization Course Description

1. Course Name:	
Web organization	
2. Course Code:	
CSC24023	
3. Semester / Year:	
1st Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
21-3-2024	
5. Available Attendance Forms:	
Attendance: theoretical + practical	
6. Number of Credit Hours (Total) / Number of Units (Total)	
3 hours per week / 2 units	
7. Course administrator's name (mention all, if more than one name)	
1- Name: Assistant Professor Dr. Ammar I.Shihab **Email:** ammar.i@sc.uobaghdad.edu.iq **2- Name**: Lecturer Mustafa Salman **Email**: mustafa.abd@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	1. Providing an easy-to-use user interface and an excellent user experience for users. 2. Improving the user experience through increasing speed of loading and responsiveness, and ensuring a responsive design that is suitable for all devices. 3. Organizing website content and making it easy to access and search. 4. Increasing website traffic and improving search engine rankings (SEO). 5. Improving quality and efficiency through applying best design practices and providing the best technological solutions for website development. 6. Enhancing personal or business branding through the website, and improv communication and interaction with customers.
1. Teaching and Learning Strategies	
Strategy	The main strategy that will be adopted in delivering this module are: 1. Power point presentation (Data show). 2. videos, is posted online and available so that students can read or listen to it whenever and as many times it is desired or needed 3. Lecture Document: i.e., a PDF file containing between 25 and 40 PowerPoint slides, with pointers to required or recommended textbooks, posted online 4. Lecture Video: i.e., one or more video recordings of an explanation of the lecture slides, posted together with the lecture document 5. Explanation on the white board using different color markers. 3. Discussions with the student during teaching. 4. Interaction with students through daily problems practice through lecture. 5. Solve different problems with more exercises. 6. Use tool kits in LABs to design simple cryptosystem in addition to simulator software. 7. Prepare reports that develop cryptography thinking for students. 8. Submit assignment that develop student learning.

2. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	3 hours/ In weeks	Chapter 1: Web Basics and Overview, What is the Internet, The World Wide Web, web Environment, How does the Browser Fetch the Pages, What is an HTML File, Website styles	Introduction to web concepts.	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
2	3 hours/ In weeks	Web Design, Site Planning, Site Goals and Guidelines, Audience Analysis, Analyze the "Competition", Know Resources & Abilities.	Understanding web design	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
3	3 hours/ In weeks	Site Map, Storyboards, Design (or redesign)	the site , Web hosting, Domain name, publishing, Testing, Marinating, Promotion	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
4	3 hours/ In weeks	Search Engine, Robots and Spiders and Crawlers, Directories, Meta Tags, Defined, Description, Keywords.	Conceptual of SEO	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
5	3 hours/ In weeks	Chapter2:The Basic, Links, and Images, HTML/XHTML, CSS (Cascading Style Sheets), JavaScript/DOM scripting, Server-side programming, XML, Java, Ajax	Topics in Web Design	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
6	3 hours/ In weeks	Site Types, Web Page Addresses (URLs), Default files,	How the Web Works, Coping with various browser versions,	Theoretical and practical lectures	Theoretical exams + practical assessment +

			type of Link's URL, Linking Within Your Own Site,		practical exams
7	3 hours/ In weeks	Chapter 3 : Topics in Web Design:	Tables, Forms, and the Standards, Advanced Table Elements, How Forms Work, From Data Entry to Response, The Action Attribute, The Method Attribute	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
8	3 hours/ In weeks	The POST method, The GET method, The Standards, HTML5. Character Encoding	Understanding new portal work	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
9	3 hours/ In weeks	Exam#1(Chapters 1, 2 & 3)	Exam mid1	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
10	3 hours/ In weeks	Chapter 4 :CSS for Presentation, Cascading Style Sheets Orientation, Benefits of CSS, How CSS Work, CSS rules, CSS Providing Values	, How CSS Work, CSS rules, CSS Providing Values	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
11	3 hours/ In weeks	Attaching the styles to the document	CSS Concepts, Conflicting styles: the cascade	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
12	3 hours/ In weeks	Chapter 5: type of webpages and Data environment	Fixed pages, elastic pages, Liquid pages	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
13	4 hours/ In weeks	Chapter 6 : information architecture	Information architecture , web Usability, web categories etc..	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
14	4 hours/ In weeks	CSS rules Specificity,	Rule order, Assigning Importance, box,	Theoretical and practical	Theoretical exams + practical

			and table model	lectures	assessment + practical exams
15	4 hours/ In weeks	Final Exam	Final Exam	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams

3. Course Evaluation	
Conducting daily, monthly exams and daily evaluation in addition to the practical part in the laboratory. The pursuit grade is 40% and the final exam grade is 60%.	
4. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Sklar, Joel. *Principles of web design: the web technologies series*. Cengage Learning, 2011.
Main references (sources)	Beaird, Jason, Alex Walker, and James George. *The principles of beautiful v design*. Sitepoint, 2020
Recommended books and references (scientific journals, reports...)	Various research works in internet
Electronic References, Websites	https://books.google.iq/books?hl=en&lr=&id=1cgIAAAAQBAJ&oi=fnd&pg=PR5&dq=web+design+principles&ots=05f68YTSkz&sig=9cQxWgfwuCe0_KdfoaQrWqYSvdw&redir_esc=y#v=onepage&q=web%20design%20principles&f=false

Digital Image Processing Course Description

1. Course Name:
Digital Image Processing
2. Course Code:
CUE31055
3. Semester / Year:
2nd Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
22/March/2024
5. Available Attendance Forms:
Morning and Evening attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
4 hours (2 Theoretical / 2 Practical) / 3 Units
7. Course administrator's name (mention all, if more than one name)
Name: Mohammed Sabih **Email: mohammed.s@sc.uobaghdad.edu.iq** **Name: Rafal Ali** **Email: Rafal.a@sc.uobaghdad.edu.iq**
8. Course Objectives
1. Enable students to define the scope of the field called digital image processing. 2. Knowledge of image processing in its space domain and in the frequency domain. 3. Discussing the methods used in this field, as well as knowing the basics of the digital image in terms of its composition, the processes of converting it into a digital image, and processing color and non-color digital images. 4. Using computer programming in the laboratory to clarify and achieve the above-mentioned goals using programming languages. 5. Discussing the basics of digital image compression and the algorithms used in this field. 6. Building applied projects that employ digital images for community service purposes.
9. Teaching and Learning Strategies
1. Explaining the scientific material to students in detail, having students participate in solving mathematical problems, and using the blackboard to explain and solve examples. 2. Use Power Point presentation programs in the classroom when giving lectures. 3. Discussion and dialogue about vocabulary related to the topic 4. Using computer programming in the laboratory for practical application using the C# environment. 5. Use the electronic platform Google Classroom to provide students with lectures.

10. Course Structure				
Week	**Hours (Theoretical and Practical)**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**4**	- Imaging system - Source of Images - Image Digitization (Quantization and Sampling)	Data Show	Quiz
2	**4**	- Basic Operation on Digital image - Basics of Digital image - Image representation - Types and Format of digital image	Data Show	Quiz
3	**4**	- Relationship between pixels - Types of operation	Data Show	Quiz
4	**4**	- Mathematical operation on Digital image - Array and matrix operation - Linear and Nonlinear - Arithmetic and Logic operations - Convolution	Data Show	Quiz
5	**4**	- Image Histogram - Histogram Modification - Equalization -Global Features	Data Show	Quiz
6	**4**	- Frequency domain and filters	Data Show	Quiz
7	**4**	- Enhance brightness of digital image	Data Show	Quiz
8	**4**	- Digital image enhancement - Spatial Filters (Mean and Weighted Mean Filter)	Data Show	Quiz
9	**4**	- Digital image enhancement - Spatial Filters (Min, Max and Median Filter)	Data Show	Quiz
10	**4**	- Edge Detection - Prewitt, Sobel and Laplace Filter	Data Show	Quiz
11	**4**	- Discrete Fourier Transform (DFT) and Low Pass Filter - Convert image to frequency domain	Data Show	Quiz
12	**4**	- Image compression - Discrete Wavelets Transform (DWT)	Data Show	Quiz

11. Course Evaluation	
60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab.	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Rafael C. Gonzalez, Richard E. Wood. Digital image processing 4th edition 2018. Pearson Education. Inc. Pearson , Prentice Hall.
Main references (sources)	Digital Image Processing and Analysis, 2nd edit

	by Scott E Umbaugh, 2010.
Recommended books and references (scientific journals, reports...)	Wilhelm Burger, Principles of Digital Image Processing: Fundamental Techniques, 2009th Edition.
Electronic References, Websites	https://sisu.ut.ee/imageprocessing/book/1

Cryptography Course Description

1. Course Name:
Cryptography
2. Course Code:
3. Semester / Year:
2nd Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
March/ 21/ 2024
5. Available Attendance Forms:
Mandatory
6. Number of Credit Hours (Total) / Number of Units (Total)
60/3
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Sarab M. Hameed Email: sarab.m@sc.uobaghdad.edu.iq Name: Mustafa Basim Mahmood Email: mostafa.bassem@sc.uobaghdad.edu.iq
8. Course Objectives
1. Understand the basic concepts, history, and importance of cryptography in modern computing and communication systems. 2. Understand different encryption algorithms, characteristics, operations, and applications. 3. Students will learn a strong understanding of the mathematical principles underlying cryptography. 4. Explore the mathematical principles underlying cryptography, including number theory and algebraic structures. 5. Learn about classical cryptographic techniques such as substitution ciphers, transposition ciphers, and their vulnerabilities. 6. Study modern cryptographic primitives including symmetric cryptography, public key cryptography, and cryptographic hash functions. 7. Explore different cryptographic tools and how to use these tools effectively.
9. Teaching and Learning Strategies
1. Delivering lectures to introduce and explain essential concepts, principles, and theories related to cryptography. This helps students build a strong foundation of knowledge. 2. Giving hands-on programming exercises helps them to apply the learned concepts and implement cryptographic algorithms. 3. Conducting problem-solving sessions, both in class and through assignments to both in class and through assignments to allow students to apply cryptographic algorithms 4. Encouraging group projects and activities among students. This promotes teamwork and enhances understanding. 5. Regular evaluations and examinations help gauge students' understanding and progress.
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١-2	٤	Understand the importance of cryptography, goals, and types.	Introduction to cryptography, types of cryptography	Data show White Board	Daily quiz
٣-4	4	Learn about classical cryptographic	Classical cryptography Including	Data show White Board	Daily quiz

		techniques such as substitution, and transposition ciphers, and their vulnerabilities.	substitution and transposition ciphers		
5	2	Understand the mathematical principles underlying cryptography.	Some notions of number theory	Data show White Board	Daily quiz
6	2		Exam		
7-9	6	Learn modern cryptographic primitives including symmetric key cryptography such as DES, 3 DES, and AES	Modern symmetric cipher	Data show White Board	Daily quiz
10-12	6	Learn modern public key cryptography such as RSA, Diffie Hellman…	Asymmetric cipher and its applications	Data show White Board	Daily quiz
13-14	4	Understand what cryptographic hash functions and their applications	Cryptographic hash function	Data show White Board	Daily quiz
15	2		Exam		

11. Course Evaluation	
Daily preparation 5%, Daily Quiz 5%, Monthly exam 20%, Assignment 10%, Final exams 60%	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
1. William Stallings. Cryptography and Network Security Principles and Practice, eighth Edition, Pearson, 2023. 2. Bruce Schneier, Applied Cryptography, Second Edition: Protocols, Algorithms, and Source Code in C, John Wiley & Sons, Inc. 3. Dan Boneh and Victor Shoup, A Graduate Course in Applied Cryptography, 2023.	
Electronic References, Websites https://crypto.stanford.edu/~dabo/courses/OnlineCrypto/ https://docs.microsoft.com/en-us/windows/win32/seccrypto/about-cryptography https://www.tutorialspoint.com/cryptography/index.htm	

Relational database Course Description

1. Course Name:
Relational database
2. Course Code:
3. Semester / Year: 2/3
2nd Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
3/2024
5. Available Attendance Forms:
Attendance time
6. Number of Credit Hours (Total) / Number of Units (Total)
45/2
7. Course administrator's name (mention all, if more than one name)
Name: Mehdi G. Duaimi Email: mehdi.k@sc.uobaghdad.edu.iq
8. Course Objectives
In this course, the student is expected to learn how to create databases efficiently, as well as learn database programming languages and understand their basic structure. The student gains a deep understanding of the design and development of database systems based on foundations, standards and practical applications. The course is also interested in addressing recent trends in the field of databases, such as relational databases and databases that rely on multi-object programming.
9. Teaching and Learning Strategies
Thinking strategy according to the student's ability. High thinking skill strategy. Critical thinking strategy in learning. Brainstorming. Creative thinking.
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٣	Understand the foundational principles and methodologies of database design.	Database Design Theory and Methodology	Lectures Reports and studies	Exams (various types) Student feedback.
2	٣	Learn how to design and implement relational databases effectively.	Relational Database Design & Implementation	Lectures Workshops	Exams (various types). Assessment of reports and studies
3	٣	Comprehend the concept of functional dependencies in database design.	Functional Dependencies	Lectures.	Exams (various types)
4	٣	Learn rules to derive additional functional dependencies from existing ones.	Inference Rules for Functional Dependencies	Lectures Group work Workshops	Exams (various types. Student feedback. Learning matrix. Assessment of reports and studies
5	٣	Understand the	Normalization;	Lectures	Exams (various types).

		normalization process to organize data efficiently.	Defining Normal Forms:	Group work Workshops	Student feedback. Learning matrix
6	٣	Define basic and further normal forms for structured data.	Basic and Further Normal forms	Lectures	Exams (various types).
7	٣	Explore techniques for improving the quality and efficiency of database schemas.	Schema Refinement in Database Design	Lectures Group work Workshops	Exams (various types). Student feedback.
8	٣	Learn the stages of developing a database application system from conception to implementation.	The Database Application System Life Cycle	Lectures. Group work	Exams (various types). Learning matrix
9	٣	Understand the process of designing the database schema; Explore transaction design for data consistency.	Schema and Transaction Design	Lectures. Group work Reports and studies	Exams (various types). Student feedback. Assessment of reports and studies
10	٣	Learn how to manage transactions and control concurrency in a multi-user database environment.	Transaction management and concurrency control	Lectures. Workshops	Exams (various types). Student feedback
11	٣	Optimize database performance by tuning its design and configurations.	Database Tuning; Tuning the Database Design	Lectures. Reports studies	Exams (various types) Student feedback Learning matrix
12	٣	Explore techniques for enhancing the overall performance of a database system.	Database Performance Optimization	Lectures. Group work. workshops	Exams (various types). Student feedback
13	٣	Understand strategies and mechanisms for database recovery in case of failures.	Database Recovery	Lectures. Reports studies	Exams (various types). . Assessment of reports and studies
14	٣	Explore advanced database design concepts beyond the basics.	Extended Database Design	Lectures. Workshops	Exams (various types) Student feedback Learning matrix
15	٣	Review and consolidate knowledge of the covered topics.	Review for the above topics	Lectures.	Exams (various types). Student feedback

11. Course Evaluation

Quizzes 5, Assignments 5, Lab. 10, Projects 5, Midterm Exam 25, Final Exam 50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems", 4th Edition, McGraw Hill, 2018. S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Datal Management Systems", Springer, 2007.
Main references (sources)	David M. Kroenke, David J. Auer. “Database processing: fundamentals, design, and implementation.”—Edition 15, Pearson Education, Prentice Hall. 2018. Mike McGrath. ‘Access in easy steps: Illustrated using Access 2019 Paperback. In Easy Steps Limited (2019).

Recommended books and references (scientific journals, reports...)	https://www.inderscience.com/jhome.php?jcode=ijiids https://dl.acm.org/journal/tods
Electronic References, Websites	https://www.inderscience.com/jhome.php?jcode=ijiids https://www.sciencedirect.com/topics/immunology-and-microbiology/database-management-system

Computer Networks Course Description

1. Course Name:
Computer Networks
2. Course Code:
3. Semester / Year:
2nd Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
March/ 21/ 2024
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Asst. Prof. Dr. Husam Ali Email: husam.a@sc.uobaghdad.edu.iq Name: Suhad Faisal Email: suhad.f@sc.uobaghdad.edu.iq
8. Course Objectives
• Working with networks often involves teamwork and collaboration. Students should enhance their communication skills and learn to collaborate effectively with peers in network design, implementation, and troubleshooting scenarios. • Through hands-on labs, projects, and case studies, students should develop critical thinking and analytical skills necessary to evaluate network architectures, identify optimization opportunities, and make informed decisions.
9. Teaching and Learning Strategies
1. .students in detail Explaining the scientific material to 2. .Students' participation in solving programming problems 3. .Discussion and dialogue about vocabulary related to the topic 4. Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF heir details are explained in the lecture, with many examples files (in short form), where t .solved on the blackboard, discussion with students, and answers to their inquiries 5. The electronic classroom is also used to give homework assignments and upload answers assroom. The classroom is also used to announce exam dates and within the electronic cl .grades... etc
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1		**Network Components**	Data show	quiz
2	1		**Network Representations and Topologies**	Data show	quiz
3	1		***Common Types of Networks***	Data show	quiz
4	1		***Internet Connections***	Data show	quiz
5	1		***Reliable Networks***	Data show	quiz

6	1		**Network Trends**	Data show	quiz
7	1		**Network Security**	Data show	quiz
8	1		**The IT Professional**	Data show	quiz
9	1		**Basic Switch and End Device Configuration**	Data show	quiz
10	1		**isco IOS AccessC**	Data show	quiz
11	1		IOS Navigation	Data show	quiz
12	1		**The Command Structure**	Data show	quiz

11. Course Evaluation	
60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab.	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	1. Cisco Networking Academy 20 https://www.netacad.com/courses/networking cna-introduction-networks. 2. Computer networking a top down appro 5th edition, Kurose , Ross. 3. Data Communications and Networking Behrouz A.Forouzan 5th edition. 4. CISCO websites, References.
Recommended books and references (scientific journals, reports...)	**Mastering Computer Networking:** **Essential Techniques Kindle Edition**
Electronic References, Websites	

Operating System I Course Description

1. Course Name:
Operating System I
2. Course Code:
3. Semester / Year:
2nd Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
22\3\2024
5. Available Attendance Forms:
Mandatory attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours (2 units)
7. Course administrator's name (mention all, if more than one name)
Name:Dr. Nada A.Z. Abdullah Email: nada.abdullah@sc.uobaghdad.edu.iq Name: Dr. Mariam A. Yasir Email : Maryam.a@sc.uobghdad.edu.iq
8. Course Objectives
• Recognize the importance of the operating systems. • Recognize how the applications interact with the operating system as the later working as intermediary program between the machine and the application. • Know how the operating systems transport the application requests to the hardware. • Understand how operating systems managing resources such as processors, memory and I/O. • Realize the efficiency or the deficiency of the different techniques used by some operating systems.
9. Teaching and Learning Strategies

Strategy	1. Attend Lectures: Regularly attend lectures to grasp the foundational concepts and understand the material presented by the instructor. 2. Take Detailed Notes: Take thorough and organized notes during lectures to aid in comprehension and review later. 3. Read the Textbook: Read the recommended textbook to gain additional insights, explanations, and examples related to operating systems. 4. Engage in Discussions: Participate in class discussions, group study sessions, or online forums to exchange ideas. 5. Complete Assignments and Projects: Actively engage in practical assignments and projects to apply theoretical concepts and enhance student hands-on skills. 6. Practice with Sample Problems: Solve sample problems and practice exercises provided by the instructor or in the textbook to reinforce student understanding. 7. Utilize Online Resources: Make use of online tutorials, educational websites, and video lectures to supplement student learning and explore different perspectives on the topics. 8. Create Concept Maps or Diagrams: Visualize complex concepts by creati concept maps or diagrams to establish connections and enhance understanding. 9. Form Study Groups: Collaborate with classmates to discuss challenging top solve problems collectively, and share different perspectives

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	2	Understanding OS Overview	Operating System Overview	White board+ Data show	Oral exam
٢	2	Remember the Computer system components	Computer system components	White board+ Data show	Oral exam
٣	2	Understand the Interrupts	Interrupts	White board+ Data show	Oral exam
٤	2	Know the different ty of Input output device	Input output devices	White board+ Data show	Oral exam
٥	2	Exam1	Exam1		
٦	2	Understand Process	Process	White board+ Data show	Oral exam
٧	2	How the Process creation and termination is performed	Process creation and termination	White board+ Data show	Oral exam
٨	2	Understand Process scheduling	Process scheduling	White board+ Data show	Oral exam
٩	2	What is IPC	IPC	White board+ Data show	Oral exam
١٠	2	Message System	Message System	White board+ Data show	Oral exam
١١	2	Exam2	Exam2		
١٢	2	Know the types of Scheduling algorithms	Scheduling algorithms	White board+ Data show	Oral exam
١٣	2	Know how the FCFS, SJF, and Priority work	FCFS, SJF, Priority	White board+ Data show	Oral exam
١٤	2	Know how the Round robin, and Multi queue scheduling work	Round robin, Multi queue scheduling	White board+ Data show	Oral exam
١٥	2	Exam3	Exam		

11. Course Evaluation

- Daily exams
- Participation degrees in answering questions during the lecture
- Monthly exams
- Reports
- Seminars

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Silberschatz, Galvin, Gagne. Operating System Concepts. John Wiley & sons, inc 2013
Main references (sources)	٢.Operating systems design and implementation, Andrew s. Tanenbaum, Prentice-Hall
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Software Engineering Course Description

1. Course Name:
Software Engineering
2. Course Code:
3. Semester / Year:
2nd Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
٢٠٢٤\٣\٢٠
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
٢
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Safaa Khalil & Dr. Fatin AbdAli Email: safaa.alwajidi@sc.uobaghdad.edu.iq
8. Course Objectives
• **Teaching the Skills Software Engineering** • **Knowing the SE Ethics** • **Prepare Students for the SW market**
9. Teaching and Learning Strategies
- Theoretical and practical lectures using modern presentation techniques - Students participate in scientific discussions through brainstorming to obtain the required conclusions Which enhances the student's broad understanding of the lecture - Practical training through projects and homework
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	٢	فهم الطرق وكيفية تطبيقها	Introduction to Software Engineering	محاضره	
٢	٢	Software Process			
٣	٢	Types of SW requirements			
٤	٢	Requirements Engineering Process			
٥	٢	Functional and Non-functional Requirements			
٦	٢	Software Design Process			
٧	٢	Software Development Process Models			
٨	٢	The Waterfall Model			
٩	٢	V-Shaped Model			

١٠	٢	Evolutionary Development Model			
١١	٢	Incremental Model Life Cycle			
١٢	٢	Spiral Modl Life Cycle			

11. Course Evaluation	
Report 20% Quiz 5 % Daily preparation and attendance 5% Assignments 10% Exams 60%	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1 – **Software Engineering 10th Edition by Ian Sommerville, ISBN 978-0133943030**
Main references (sources)	1 – **Software Engineering 10th Edition by Ian Sommerville, ISBN 978-0133943030**
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://software-engineering-book.com/

Course Description Form

1. Course Name:

Research Methodology

2. Course Code:

3. Semester / Year:

2nd Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤

4. Description Preparation Date:

March / ٢١ / ٢٠٢٤

5. Available Attendance Forms:

6. Number of Credit Hours (Total) / Number of Units (Total)

15 Hours / One Unit

7. Course administrator's name (mention all, if more than one name)

Name: Asst. Prof. Dr. Zeina Mueen Mohammed
Email: zeina.m@uobaghdad.edu.iq
Name: Dr. Dhuha Abdulhadi Abduljabbar
Email: dhuha.abd@sc.uobaghdad.edu.iq

8. Course Objectives

1. Teach students the correct methodology for conducting scientific research.
2. Developing students' scientific writing skills, as they learn how to write structured academic scientific reports.
3. Identify the types of scientific research and distinguish between them.
4. Providing students with the skill of scientific searching on the Internet.
5. Encouraging research programs and participating in scientific conferences and seminars.

9. Teaching and Learning Strategies

1. Lectures (hard copy).
2. Presentations.
3. Field visits.
4. Electronic classes and websites.
5. Assigning the student some individual and group assignments.
6. Managing the lecture in a way that indicates the importance of time.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	1		Introduction to Research Methodology –Part 1 (a) A review of the Fundamentals (b) Definitions of Research (c) Objectives of Research	Data show	quiz
٢	1		Introduction to Research Methodology –Part 2 (d) Motivation in Research (e) General Characteristics of	Data show	quiz

			Research (f) Types of Research		
٣	1		The Research Problem –Part 1 (a) What is a Research Problem (b) Selecting the Problem (c) Sources of the Problem	Data show	quiz
٤	1		The Research Problem –Part 2 (d) Statement of a Problem (e) Evaluation of a Problem	Data show	quiz
٥	1		The Review of Literature (a) Meaning of Review of Literature (b) Objectives of Review of Literature (c) Sources of Literature (d) Reporting the Review of Literature	Data show	quiz
٦	1		Exam		
٧	1		The Research Approach –Part1 (a) The Qualitative Approach (b) The Quantitative Approach	Data show	quiz
8	1		The Research Approach –Part2 (c) The Mixed-Methods Approach (d) Criteria for Selecting a Research Approach	Data show	quiz
9	1		Data Collection Methods –Part1 (a) Questionnaires (b) Interviews	Data show	quiz
10	1		Data Collection Methods –Part2 (c) Focus Groups (d) Observation	Data show	quiz
11	1		Sampling (a) Meaning and Definition of Sampling (b) Functions of Population and Sampling (c) Methods of Sampling	Data show	quiz
12	1		Preparation of the Research – part 1 (a) Characteristics of a Good Research Title (b) Structure of research paper: (1) Abstract	Data show	quiz

13	1		Preparation of the Research – part 2 Structure of research paper: (2) Introductions (3) Review of the literature (4) Methodology	Data show	quiz
14	1		Preparation of the Research – part 3 Structure of research paper: (5) Result & Discussions (6) Conclusions	Data show	quiz
15	1		Exam		

11. Course Evaluation	
60% for the written final exam, 40% for the course (5% for the attendance, 15% for the first monthly exam, 15% for the second monthly exam, 5% for the quizzes and homework.	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	1. Mishra, S. B., & Alok, S. (2022). Handbook of research methodology. 2. Kumar, R. (2018). Research methodology: A step-by-step guide for beginners. Sage. 3. Kothari, C. R. (2004). Research methodology: Methods and techniques. New Age International.
Recommended books and references (scientific journals, reports...)	Books and research papers from Scopus and WoS databases
Electronic References, Websites	

Mobile Computing Course Description

1. Course Name:
Mobile Computing
2. Course Code:
3. Semester / Year:
2nd Semester/ 3rd Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
2023-20224
5. Available Attendance Forms:
Physical attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
1 theoretical hours (weekly) + 2 practical hours (weekly)/ Two units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Alyaa Mohammed Noori Idan Al-Barrak Email: Alyaa.al-barrak@sc.uobaghdad.edu.iq
8. Course Objectives

a. Preparing specialists who are familiar with the basics of mobile phone computing in theory and practice and who can fill the needs of the labor market. **b. Cooperating with state institutions and the private sector by providing scientific advice and consultations.**	• **Conducting scientific research and trying to keep pace with scientific development.**

9. Teaching and Learning Strategies

i. Theoretical lectures in class, in addition to downloading PDF files into the electronic class for reference when needed.
ii. Practical lectures in the laboratory in addition to electronic classes for practical mobile phone computing
iii. Educational videos via the official YouTube channel
iv. Recorded lectures for Google Mate that are uploaded to the electronic classroom, recorded from past years.
v. Electronic books and lectures that can be consulted.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First Week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Introduction to Mobile computing	Attending a theory lecture	Daily and monthly exam and homework
2nd week	1	Understanding the lecture from a theoretical perspective,	Application of Mobile	Attending a theory lecture	Daily and monthly

		future and practical developments, and their impact on the student's professional aspect and market requirements	Application and Limitations		exam and homework
3rd week	1	Be prepared for the frequent exams	1st exam	In-person examination	
4th week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Multiplexing Types	Attending a theory lecture	Daily and monthly exam and homework
5th week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	CDMA working examples	Attending a theory lecture	Daily and monthly exam and homework
6th week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Mobile computing Network	Attending a theory lecture	Daily and monthly exam and homework
7th week	1	Be prepared for the frequent exams	Second Exam	In-person examination	
8th week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Mobile generations	Attending a theory lecture	Daily and monthly exam and homework
9th week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	A simplified reference model	Attending a theory lecture	Daily and monthly exam and homework
10th week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Introduction to GSM	Attending a theory lecture	Daily and monthly exam and homework

11th week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM Architecture	Attending a theory lecture	Daily and monthly exam and homework
12th week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM Architecture	Attending a theory lecture	Daily and monthly exam and homework
13th week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM Services	Attending a theory lecture	Daily and monthly exam and homework
14th week	1	Be prepared for the frequent exams	Third Exam	In-person examination	
15th week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	revision	Attending a theory lecture	Daily and monthly exam and homework

11. Course Evaluation

- Quarterly attendance exams (3 exams are conducted and the two highest grades are chosen)
- Daily exams out of 10 and the best ones are selected
- Take the practical exams more than twice and choose the highest grade among them
- An assignment that gives a class time to submit.

12. Learning and Teaching Resources

Required textbooks (curricular books, any)	Asoke K Talukder (Author), Roopa Yavagal, "Mobile Computing: Technology, Applications, and Service Creation" McGraw Hill; 1st edition (November 16, 2006).
Main references (sources)	Charles Harper, "Mobile Computing." (2022)
Recommended books and references (scientific journals, reports...)	Pattnaik, P.K. and Mall, R., 2015. Fundamentals of Mobile Computing. PHI Learning Pvt. Ltd.
Electronic References, Websites	www.geeksforgeeks.org

Fourth Grade

Course Description Form

1. Course Name:
Operating System II
2. Course Code:
3. Semester / Year:
1st Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
22\3\2024
5. Available Attendance Forms:
Mandatory attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours (3 units)
7. Course administrator's name (mention all, if more than one name)
Name:Dr. Nada A.Z. Abdullah Email: nada.abdullah@sc.uobaghdad.edu.iq Name: Dr. Mariam Abdulraheem Email : Maryam.a@sc.uobghdad.edu.iq
8. Course Objectives

Course Objectives	• Recognize the importance of the operating systems. • Recognize how the applications interact with the operating system as the later working as intermediary program between the machine and the application. • Know how the operating systems transport the application requests to the hardware. • Understand how operating systems managing resources such as processors, memory and I/O. • Realize the efficiency or the deficiency of the different techniques used by some operating systems.
9. Teaching and Learning Strategies	
Strategy	1. Attend Lectures: Regularly attend lectures to grasp the foundatio concepts and understand the material presented by the instructor. 2. Take Detailed Notes: Take thorough and organized notes during lectures aid in comprehension and review later. 3. Read the Textbook: Read the recommended textbook to gain additior insights, explanations, and examples related to operating systems. 4. Engage in Discussions: Participate in class discussions, group stu sessions, or online forums to exchange ideas. 5. Complete Assignments and Projects: Actively engage in practical assignments and projects to apply theoretical concepts and enhance stud

	hands-on skills. 6. Practice with Sample Problems: Solve sample problems and pract exercises provided by the instructor or in the textbook to reinforce stud understanding. 7. Utilize Online Resources: Make use of online tutorials, educatio websites, and video lectures to supplement student learning and expl different perspectives on the topics. 8. Create Concept Maps or Diagrams: Visualize complex concepts by creat concept maps or diagrams to establish connections and enha understanding. 9. Form Study Groups: Collaborate with classmates to discuss challeng topics, solve problems collectively, and share different perspectives

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	2	understanding Synchronization and Race condition	Synchronizatio and R condition	White board+ Data show	Oral exa
٢	2	understanding Critical section solutions	Critical sect solutions	White board+ Data show	Oral exa
٣	2	understanding Atomic instruction	Atomic instructi	White boa Data show	Oral exa
٤	2	understanding Semaphores	Semaphores	White boa Data show	Oral exa
٥	2		Exam		
٦	2	Main memory	Main memory	White boa Data show	Oral exa
٧	2	Contiguous allocation	Contiguous allocation	White boa Data show	Oral exa
٨	2	Paging	Paging	White boa Data show	Oral exa
٩	2	Segmentation	Segmentation	White boa Data show	Oral exa
١٠	2	Paging segmentation implementatio	Paging segmentation implementation	White boa Data show	Oral exa
١١	2		Exam		
١٢	2		Seminars	White boa Data show	Oral exa
١٣	2	Virtual memor	Virtual memory	White boa Data show	Oral exa
١٤	2	Page fault	Page fault	White boa Data show	Oral exa
١٥	2		Exam		

11. Course Evaluation

• Daily exams • Participation degrees in answering questions during the lecture • Monthly exams • Reports • Seminars	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1. Silberschatz, Galvin, Gagne. Operating System Concepts. John Wiley & sons , inc 2013
Main references (sources)	٢.Operating systems design and implementation, Andrew s. Tanenbaum, Prentice-Hall
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Electronic Commerce Course Description Form

1. Course Name:
Electronic Commerce
2. Course Code:
447 CECOM
3. Semester / Year:
1st Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
20/3/2024
5. Available Attendance Forms:
20/3/2024
6. Number of Credit Hours (Total) / Number of Units (Total)
2/2 (30)
7. Course administrator's name (mention all, if more than one name)
Name: Pro. Dr. Ghadah K. Al-Khafaji Email: ghada.toma@sc.uobaghdad.edu.iq Name: Asst. Pro. Dr. Bushra A. Sultan Email: Bushra.sultan@sc.uobaghdad.edu.iq
8. Course Objectives

Course Objectives	1- To gain an understanding of the theories and concepts underlying e-commerce. 2-To understanding of basic concepts, theories, and business models underlying e-commerce with the theory and concepts to what e-marketers are doing in "the real world" via purchasing using online payments. 3- To understanding the relation between E-C and E-B. 4- To improve familiarity with current challenges and issues in e-commerce especially the security one.

9. Teaching and Learning Strategies

Strategy	1- Explaining the scientific material to students in detail. 2- Students' participation in solving programming problems. 3- Discussion and dialogue about vocabulary related to the topic. 4- Use the electronic classroom (Google Classroom) to upload lectures in the fo of PDF files (in short form), where their details are explained in the lecture, with ma examples solved on the blackboard, discussion with students, and answers to their inquiries. The electronic classroom is also used to give homework assignments and upl answers within the electronic classroom. The classroom is also used to announce ex dates and grades... etc.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			1- Introduction to Commerce and E-Commerce:	Data	Quiz

			Introduction, An overview, History of ecommerce; Differences/similarities between e-commerce and traditional commerce Advantages/Disadvantages, Features & scope characteristics, Development /infrastructures along process and examples. 2- Continue with e-Com Principles: E-Commerce Steps Flow, E-Commerce in Figures, Buyer/Seller Rules, Why Internet Commerce. Internet Commerce Strategies, Benefits and Types of E-Commerce Sites 3- Ecommerce /E-Business Models Distinguish between e-commerce and e business; structure, Macro & environment. 4- E-C Classification Models: Identifying Transaction Partners Model with advantages/disadvantages and features of each type 5- Degree of digitization, Impact of E-C and Social Impact E-Commerce Process Models , The Criteria that Determine the Level of Advancement in EC/EB 6- On line Shopping/ E-Shop 7- First Exam 8-The Benefits and Limitation of E-C (customer, organization & Social, Online Banking What is online banking, how to register for online banking, ad special facilities offered by some internet banking 9- Architecture framework of E-C. Issues, challenges and problems (technical/non- technical) 10- Second Exam 11- Components of E-C with Payment Systems &Online shopping: The Electronic payments (credit, debit, wallet), and on line shopping features and restrictions 12- Electronic Data Interchange: EDI documents, Steps in EDI system, structures, Advantages/Disadvantages EDI Working Concept, Implementation difficulties of EDI, Financial EDI, types 13- Online advertising: Introduction to online adverting, Internet advertising compared to traditional advertising, Advantages and disadvantages of online advertising types, Web Commerce & Online Auctions 14- M-Commerce: Overview of M-Commerce, Generations of Mobile Wireless Technology, advantages, features and differences 15- Internet e-commerce Security, E-Commerce & Ethics	show	

11. Course Evaluation	
Daily and monthly exams and quizzes, class participation and attendance, in addition to preparing reports so that the endeavor is 40% and the final exam is 60%.	
12. Learning and Teaching Resources	
Required textbooks (curricular book if any)	1- E-Commerce Business Model 2020: This Book Includes: Online Marketing Strategies, Dropshipping, Amazon FBA - Step-by-Step

	Guide with Latest Techniques to Make Money Online and Reach Financial Freedom. (2020). Jim, W. and George, B. Independently published 2The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power. (2019), Michael A. , Annabelle G., and David B. Harper Business; Illustrated edition 3- Electronic Commerce 2018 A Managerial and Social Networks Perspective. (2018) Turban, E., Outland, J., King, D., Lee, J.K., Liang, T.-P., Turban, D.C. Springer International Publishing 4-Introduction to E- Commerce: Combining Business and Information Technology. (2016), Martin, K. Deloitte. 5-E Commerce and EBuisness, Zorayda Ruth B. Andam , (2013) 6- E_ Commerce Strategy, Technologies and Applications, David Whiteley. (2010).
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://www.slideshare.net/Saddamuddin/ecommerce-short-notes http://wikipedia.org/wiki/online_advertising https://backup.pondiuni.edu.in/storage/dde/dde_ug_pg_books/E-%20Commerce.pdf استخدام لبعض مواقع التجاره الالكترونيه الموثوقه مثل e bay & Amazon

Multimedia Course Description Form

1. Course Name:	
Multimedia	
2. Course Code:	
CSC415	
3. Semester / Year:	
1st Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
23/March/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4 hours (2 Theoretical / 2 Practical) / 3 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Mohammed Sabih Email: Mohammed.s@sc.uobaghdad.edu.iq Name: Rafal Ali Email: Rafal.a@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	1. Enable students to define the scope of the field called Multimedia. 2. Know the processing of multimedia components (including text, sound, image, video) in its space domain and in the frequency domain. 3. Discussing the methods used in this field, as well as knowing the basics of the text, sound, image, video in terms of its composition, the processes of converting it into a digital, and processing. 4. Using computer programming in the laboratory to clarify and achieve the above-mentioned goals using programming languages. 5. Discussing the basics of sound, image, video compression and the algorithms used in this field. 6. Building applied projects that employ Multimedia components for community service purposes.
9. Teaching and Learning Strategies	
Strategy	1. Explaining the scientific material to students in detail, having students participate in solving mathematical problems, and using the blackboard to explain and solve examples. 2. Use Power Point presentation programs in the classroom when giving lectures. 3. Discussion and dialogue about vocabulary related to the topic 4. Using computer programming in the laboratory for practical application using the C# environment. 5. Use the electronic platform Google Classroom to provide students with lectures.

10. Course Structure

Week	Hours (Theoretical and Practical)	Unit or subject name	Learning method	Evaluation method
1	**4**	-Definition of Multimedia -Components of MM -Digital representation of MM components -Compression in MM	Data Show	Quiz
2	**4**	-MM system -MM Related Technology -Media classification	Data Show	Quiz
3	**4**	-MM application -Interactivity -Categories of MM	Data Show	Quiz
4	**4**	-Exploring MM on the web -Multimedia data -Global structure of MM	Data Show	Quiz
5	**4**	-Basics of Sound -Characteristics of sound wave -Frequency content of audio signal -Digital audio	Data Show	Quiz
6	**4**	-Nyquist Theorem -Quantization and transmission of audio	Data Show	Quiz
7	**4**	-Audio compression -Examples	Data Show	Quiz
8	**4**	-Basics of image -Number of colors -Types of images	Data Show	Quiz
9	**4**	-Types of Digital Image File Format -Image digitization	Data Show	Quiz
10	**4**	-Basics of Video -Characteristics of video -Color models	Data Show	Quiz
11	**4**	-Video size -Examples	Data Show	Quiz
12	**4**	-Video Formats	Data Show	Quiz

11. Course Evaluation
60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab.

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Fundamentals of Multimedia, 2nd Edition, by Ze-Nian Li, Jiangchuan Liu, Mark S. Drew.
Main references (sources)	Digital Video Processing, 2nd Edition, by A. Mu Tekalp.
Recommended books and references (scientific journals, reports...)	Rafael C. Gonzalez, Richard E. Wood. Digital image processing 4th edition 2018. Pearson Education. Inc. Pearson , Prentice Hall.
Electronic References, Websites	What is Multimedia? - GeeksforGeeks

Mobile Computing Course Description Form

1. Course Name:
Mobile Computing (Advanced)
2. Course Code:
3. Semester / Year:
1st Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
2023-20224
5. Available Attendance Forms:
Physical attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical hours (weekly) + 2 practical hours (weekly)/ three units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Alyaa Mohammed Noori Idan Al-Barrak Email: Alyaa.al-barrak@sc.uobaghdad.edu.iq
8. Course Objectives

a. Preparing specialists who are familiar with the basics of mobile phone computing in theory and practice and who can fill the needs of the labor market. **b. Cooperating with state institutions and the private sector by providing scientific advice and consultations.**	• **Conducting scientific research and trying to keep pace with scientific development.**

9. Teaching and Learning Strategies	
Strategy	i. Theoretical lectures in class, in addition to downloading PDF files into the electronic class for reference when needed. i. Practical lectures in the laboratory in addition to electronic classes for practical mobile phone computing i. Educational videos via the official YouTube channel v. Recorded lectures for Google Mate that are uploaded to the electronic classroom, recorded from past years. v. Electronic books and lectures that can be consulted.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First Week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect	GSM	Attending a theory lecture	Daily and monthly exam and homework

		and market requirements			
2nd week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM Frame	Attending a theory lecture	Daily and monthly exam and homework
3rd week	2	Be prepared for the frequent exams	1st exam	In-person examination	
4th week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM Protocols	Attending a theory lecture	Daily and monthly exam and homework
5th week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM - Radio Air Interface Fdd/FDMA	Attending a theory lecture	Daily and monthly exam and homework
6th week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM System Calling	Attending a theory lecture	Daily and monthly exam and homework
7th week	2	Be prepared for the frequent exams	Second Exam	In-person examination	
8th	2	Understanding the	Handover and	Attending a	Daily and

week		lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Security	theory lecture	monthly exam and homework
9th week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	New Data Services	Attending a theory lecture	Daily and monthly exam and homework
10th week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Motivation for a specialized MAC	Attending a theory lecture	Daily and monthly exam and homework
11th week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Mobile IP	Attending a theory lecture	Daily and monthly exam and homework
12th week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's	Mobile Transport Layer	Attending a theory lecture	Daily and monthly exam and homework

		professional aspect and market requirements			
13th week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Database issues	Attending a theory lecture	Daily and monthly exam and homework
14th week	2	Be prepared for the frequent exams	Third Exam	In-person examination	
15th week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Data Dissemination	Attending a theory lecture	Daily and monthly exam and homework

11. Course Evaluation
• Quarterly attendance exams (3 exams are conducted and the two highest grades are chosen) • Daily exams out of 10 and the best ones are selected • Take the practical exams more than twice and choose the highest grade among them • An assignment that gives a class time to submit.

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Asoke K Talukder (Author), Roopa Yavagal, "Mobile Computing: Technology, Applications, and Service Creation" McGraw Hill; 1st edition (November 16, 2006).
Main references (sources)	Charles Harper, "Mobile Computing." (2022)
Recommended books and references (scientific journals, reports...)	Pattnaik, P.K. and Mall, R., 2015. Fundamentals of Mobile Computing. PHI Learning Pvt. Ltd.
Electronic References, Websites	www.geeksforgeeks.org

Parallel programming Course Description Form

1. Course Name:

Parallel programming

2. Course Code:

CS9410

3. Semester / Year:

1st Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤

4. Description Preparation Date:

21-3-2024

5. Available Attendance Forms:

Attendance: theoretical + practical

6. Number of Credit Hours (Total) / Number of Units (Total)

4 hours per week / 3 units

7. Course administrator's name (mention all, if more than one name)

1- Name: Assistant Professor Dr. Nada Hussein M. Ali

Email: nada.husn@sc.uobaghdad.edu.iq
2- Name : Assistant Professor Dr. Ammar Ibrahim

Email: ammar.i@sc.uobaghdad.edu.iq

8. Course Objectives

Course Objectives

1. The course aims to enable the student to prepare programs using

Multiple CPU processors available in personal computers to obtain
higher speeds in program execution.
2. The basic language for teaching students in this course is Visual C++, where there is a gradual shift from the structured programming method that was used in

writing programs within the courses of the

previous stages to preparing
programs consisting of instructions that deal directly with the operating
system in the personal computer using an API specific to the WINDOWS
system and are implemented in parallel
3. Obtaining high speeds in executing programs.

4. Teaching and Learning Strategies

Strategy	Training the student to rely on himself in writing programs, where part of the scheduled program is given before the practical laboratory time to be discussed, and the rest of the requirements are completed during laboratory hours.

Advanced computer Networks Course Description Form

1. Course Name:
Advanced computer Networks
2. Course Code:
3. Semester / Year: First Semester
1st Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date: March/ 21/ 2024
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Asst. Prof. Dr. Husam Ali Email: husam.a@sc.uobaghdad.edu.iq Name: Suhad Faisal Email:
8. Course Objectives

Course Objectives	• **.....** • **.....** • **.....**

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1		**Introduction to Networking** **Networks Advantages and Disadvantages** **Network Types**	Data show	quiz
2	1		**The OSI and TCP/IP Networking Models** **TCP/IP Model**	Data show	quiz
3	1		***Application Layer (Layer 7)*** ***Presentation Layer (Layer 6)*** ***Session Layer (Layer 5)*** **Full-Duplex vs. Half-Duplex Communications**	Data show	quiz

			Transport Layer (Layer 4)		
4	1		***Network Layer (Layer 3)*** **Overview of IP Addresses** ***Data Link Layer (Layer 2)*** **What Is a MAC Address?** ***Physical Layer (Layer 1)***	Data show	quiz
5	1		***Data Encapsulation Using the OSI Model*** **Decapsulation process** **Client/Server Network** **Peer-to-Peer Network** **Application Layer Services and Protocols**	Data show	quiz
6	1		**Domain Name Service (DNS)** **Dynamic Host Configuration Protocol (DHCP)** **Simple Network Management Protocol (SNMP)** **File Transfer Protocol (FTP)**	Data show	quiz
7	1		**Trivial File Transfer Protocol (TFTP)** **Simple Mail Transfer Protocol (SMTP)** **Post Office Protocol (POP)** **Telnet** **Secure Shell (SSH)** **Hypertext Transfer Protocol (HTTP)** **Two HTTP Request Methods: GET and POST**	Data show	quiz
8	1		**Hypertext Transfer Protocol Secure (HTTPS)** **Transport layer protocols (TCP/UDP)** **Port Range Groups** **Commutation message types** **To configure TCP/IP settings** **Physical media**	Data show	quiz
9	1		**Types of Interfaces** **UTP Cables Connections types** **Data Communications Equipment and Data Terminal Equipment** **How to prepare a UTP cable** **Diagnosing Wire map Faults** **WIRESHARK Packet Sniffer**	Data show	quiz
10	1		Network Devices & Packet Tracer network interface card (NIC)	Data show	quiz

			Hub **Bridge** **Switch** **The Wireless Access Point (WAP)** **Router**		
11	1		**Layer 3 Switches** **Gateways** **Modems** **Traditional (POTS)** **DSL** **CSU/DSUs** **Firewalls**	Data show	quiz
12	1		**Network Simulation** **Task 1 Observe the flow of data from PC0 to PC1 by creating network traffic** **Task 2 View ARP Tables on each PC** **Task 3 Adding routers and installing modules** **Task 4 Basic router configuration** **Task 5 Create a copy of the existing router complete with WIC modules already in place** **Task 6 Configuring the WAN link** **Task 7 Configure the routing protocol** **Task 8 Set the default gateway on the PCs** **Task 9 Test the connectivity of the network** **Task 10 Save the Packet Tracer file**	Data show	quiz

11. Course Evaluation	
60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab.	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	**Advanced Computer Networking:** **Concepts and Applications, Oct 01, 2006,** **Prof. Satish Jain.** .
Recommended books and references (scientific journals, reports...)	**Mastering Computer Networking:**

	Essential Techniques Kindle Edition
Electronic References, Websites	

Advanced Computer Graphics Course Description Form

1. Course Name:
Advanced Computer Graphics
2. Course Code:
3. Semester / Year:
2nd Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
21-3-2024
5. Available Attendance Forms:
Class attendance system
6. Number of Credit Hours (Total) / Number of Units (Total)
٤/٣
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Suhaila Najim Mohammed Email: suhailan.mo@sc.uobaghdad.edu.iq
8. Course Objectives

Course Objectives	The main objective of this course is to introduce students the fundamental concepts in computer graphics including a range of computer graphics techniques and algorithms covering 3D graphics, computer animation and virtual reality. It focuses on key algorithmic techniques, mathematical and programmatic foundations of computer graphics, including modeling, rendering, and animating 3D scenes. Topics include three-dimensional shape representations, geometrical transformations (e.g. rotations, scales, translations, reflection, shearing), the projection, the rasterization pipeline, ray tracing, illumination and shading models, texturing, blending and light & visual perception.

9. Teaching and Learning Strategies

Strategy	1. Delivering lectures to introduce and explain essential concepts, principles, and theories related to computer graphics. This helps students build a strong foundation of knowledge. 2. Giving hands-on programming exercises helps them to apply the learned concepts and implement 3D graphics. This helps their understanding and enhances their programming skills. 3. Providing code walkthroughs and examples demonstrating the modeling and rendering 3D scenes. 4. Conducting problem-solving sessions, both in class and through assignments to allows students to use graphics primitives and transformations for objects modeling and rendering. 5. Encouraging group projects and activities among students. This promotes teamwork and enhances understanding. 6. Regular evaluations and examinations help gauge students' understanding and progress. These can include quizzes, assignments, and exams that assess theoretical knowledge and practical application of computer graphics. 7. Recommending textbooks, internet resources, and supplementary

	references might help students study more effectively.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Introduction to 3D graphics	Introduction to the C# programming language environment, the OpenGL API, and the tools it provides for dealing with computer graphics	Data show	quiz
2	4	Introducing the rendering process and its main stages	Working with geometric shapes (point, line, and rectangle) in OpenGL	Data show	quiz
3	4	Learn about three-dimensional coordinates systems	Modeling some graphic shapes in OpenGL	Data show	quiz
4	4	Introduction to the Projection process and its types	Programming the different types of Projection and studying their effect and the difference between them	Data show	quiz
5	4	Dealing with conversions between Coordinate Systems in 3D graphics programs	Performing conversions between coordinates systems such as Model View and Viewport transform	Data show	quiz
6	4	Dealing with basic 3D transformations (translate, scale, and shearing)	Performing basic and combined transformations on some geometric shapes	Data show	quiz
7	4	Understanding basic 3D transformations (reflection, rotation, composition, and inverse transformations)	Modeling a 3D shape (such as a cube)	Data show	quiz
8	4	Identify the effects of lighting and its types	Programming the lighting effect and its types	Data show	quiz
9	4	Dealing with the mechanism of shading and its different types	Modeling some three-dimensional shapes and studying the effect of light and shadow on them	Data show	quiz

10	4	Understanding Texture Mapping and its different types	Performing Texture Mapping and wrapping 2D images inside 3D faces	Data show	quiz
11	4	Introduction to Reflection and Blending methods	Modeling shapes with different transparency and study the interactions between them	Data show	quiz
12	4	Introduction to animation and its various mechanisms	Modeling integrated 3D scenes	Data show	quiz
13	4	Dealing with some advance topics in computer graphics (virtual reality and augmented reality)	Adding animation effects between 3D scenes	Data show	quiz
14	4	Understanding some advance topics in computer graphics (games)	Simulating some effects of virtual reality and augmented reality	Data show	quiz
15	4	Mid-Exam	Mid-Exam + display of projects completed by students	Data show	quiz

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1) "Fundamentals of Computer Graphics", S. Marschner, and P. Shirley, CRC Press (A K Peters), 2021. 2) "Computer Graphics: Principles and Practice", J. F. Hughes, A. V. Dam, M. McGuire, D. F. Sklar, J. D. Foley, S. K. Feiner, and K. Akeley, Addison-Wesley (Pearson Education), 2014.
Main references (sources)	1. Steve Marschner and Pete Shirley. Fundamentals of Computer Graphics. A K Peters, 2021. 2. John F. Hughes, Andries van Dam, Morgan McGuire, David F. Sklar, James D. Foley, Steven K. Feiner, and Kurt Akeley. Computer Graphics: Principles and Practice. 2014.
Recommended books and references (scientific journals, reports...)	1) "Introduction to Computer Graphics". F. Klawonn, Springer-Verlag London, 2nd Edition, 2012. 2) "OpenGL Programming Guide", Addison-Wes (Pearson Education), D. Shreiner, G. Sellers, Kessenich, B. Licea-Kane, 8th Edition, 2013.

Electronic References, Websites	1) https://www.coursera.org/learn/interactive-computer-graphics 2) https://www.sciencedirect.com/journal/computers-and-graphics 3) https://www.frontiersin.org/journals/computer-science/sections/computer-graphics-and-visualization

English Language Course Description Form

1. Course Name:
English Language
2. Course Code:
3. Semester / Year:
2023/2024
4. Description Preparation Date:
22/3/2024
5. Available Attendance Forms:
In person
6. Number of Credit Hours (Total) / Number of Units (Total)
2 credit hours / 2 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr Haneen Ahmed Email: haneen.a@sc.uobaghdad.edu.iq
8. Course Objectives

Course Objectives	**Reviewing the English language skills the student l learned and adding new vocabulary and skills t serve the student in his field of academic study and developing his linguistic capabilities.**
9. Teaching and Learning Strategies	
Strategy	- Providing the student with the basics of the topics - Discussions and problem solving during the lecture - Asking intellectual questions, such as why and how - Giving assignments

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theoretical	Unit 1		lectures	Midterm exam Daily evaluations
2	2 theoretical	Unit 2		lectures	Midterm exam Daily evaluations
3	2 theoretical	Unit3		lectures	Midterm exam Daily evaluations
4	2 theoretical	Unit 4		lectures	Midterm exam Daily evaluations
5	2 theoretical	Unit 5		lectures	Midterm exam Daily evaluations
6	2 theoretical	Unit 6		lectures	Midterm exam Daily evaluations

7		1st written exam		lectures	Midterm exam Daily evaluations
8	2 theoretical	Unit 7		lectures	Midterm exam Daily evaluations
9	2 theoretical	Unit 8		lectures	Midterm exam Daily evaluations
10	2 theoretical	Unit 9		lectures	Midterm exam Daily evaluations
11		2nd written exam		lectures	Midterm exam Daily evaluations
12	2 theoretical	Unit 10		lectures	Midterm exam Daily evaluations
13	2 theoretical	Unit 11		lectures	Midterm exam Daily evaluations
14	2 theoretical	Unit 12		lectures	Midterm exam Daily evaluations
15	2 theoretical	Review		lectures	Midterm exam Daily evaluations

11. Course Evaluation
- Monthly exams - daily evaluation - homework

12. Learning and Teaching Resources	
Required textbooks (curricular books, if an	New Headway Plus Upper Intermediate, John Liz Soars, Oxford University Press, 2014
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Online dictionaries such as: Meriam-Webster: https://www.merriam-webster.com/ Cambridge: https://dictionary.cambridge.org

Computer security Course Description Form

1. Course Name:
Computer security
2. Course Code:
CS9420
3. Semester / Year:
Semester
4. Description Preparation Date:
2nd Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤
5. Available Attendance Forms:
21-3-2024
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours –week / 2 units
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Dr. Nada Hussein M. Ali Email: nada.husn@sc.uobaghdad.edu.iq Name: Assistant Professor Mays M. Hoobi Email: Mays.m@sc.uobaghdad.edu.iq
8. Course Objectives

Course Objectives	**a.** Identify the basic concepts of computer security **b.** Learn how to take advantage of these concepts to protect computers from external threat sources **c.** A detailed understanding of the nature of the work of protection software
9. Teaching and Learning Strategies	
Strategy	Training students on scientific research through seminars and brainstorming during and after the lecture

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introduction to computer security.		Data show	quiz
2	2	Access Control -1		Data show	quiz + seminars
3	2	Access Control -2		Data show	quiz + seminars
4	2	Identification and Authentication		Data show	quiz + seminars
5	2	Malicious software		Data show	quiz + seminars

		(Malware)-1			
6	2	Malicious software (malware)-2		Data show	quiz + seminars
7	2	**Mid Term Exam**		Data show	quiz + seminars
8	2	Virus		Data show	quiz + seminars
9	2	Introduction to Firewalls -1		Data show	quiz + seminars
10	2	Introduction to Firewalls -2		Data show	quiz + seminars
11	2	Intrusion detection system		Data show	quiz + seminars
12	2	Intrusion prevention system		Data show	quiz + seminars
13	2	security protocols1		Data show	quiz + seminars
14	2	security protocols1		Data show	quiz + seminars
15	2	**Final Exam**		Data show	quiz + seminars

11. Course Evaluation

Conducting daily and monthly exams and daily evaluation, in addition to giving seminars during the lecture. The pursuit grade is 40% and the final exam grade is 60%.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Security in Computing, Fourth Edition, By Charles P. Pfleeger - Pfleeger Consulting Group, Shari Lawrence Pfleeger , 2010
Main references (sources)	Stallings W., 2017,***"Network Security Essentials, Applications and Standards "***, Fourth edition, Pearson Education, Inc.,
Recommended books and references (scientific journals, reports...)	Various scientific research on the Intern
Electronic References, Websites	Various research websites in internet

Software Development Tools Course Description Form

1. Course Name:
Software Development Tools
2. Course Code:
CSC24023
3. Semester / Year:
2nd Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
21-3-2024
5. Available Attendance Forms:
Attendance: theoretical + practical
6. Number of Credit Hours (Total) / Number of Units (Total)
3 hours per week / 2 units
7. Course administrator's name (mention all, if more than one name)
3- Name: Assistant Professor Dr. Ammar I.Shihab **Email:** ammar.i@sc.uobaghdad.edu.iq **4- Name** : Lecturer Bilal S.Albayati **Email**: bilal.s@sc.uobaghdad.edu.iq
8. Course Objectives

Course Objectives	• **Foundational Knowledge:** Gain a comprehensive understanding of the different categories of software development tools and their roles within the Software Development Lifecycle (SDLC). • **Tool Proficiency:** Develop practical skills in using various software development tools, including IDEs, version control systems, debuggers, testing frameworks, and project management tools. • **Workflow Integration:** Learn how to integrate different development tools into a cohesive workflow, streamlining development processes and maximizing efficiency. • **Effective Tool Selection:** Develop the ability to select the most appropriate tool for a specific task based on project requirements, programming languages, and team preferences. • **Best Practices:** Master best practices for using software development tools effectively, including configuration management, automation techniques, and collaboration strategies. • **Troubleshooting and Problem-Solving:** Gain the ability to identify and resolve issues that may arise while using development tools, including debugging errors and optimizing tool performance. • **Staying Updated:** Develop strategies for staying current with advancements in the software development tool landscape. This includes learning about new tools, updates to existing tools, and emerging trends in development methodologies.

5. Teaching and Learning Strategies	
Strategy	**Course Strategy for Software Development Tools**

Target Audience:

- Define your target audience clearly. Are they beginners, experienced developers, or individuals transitioning to a new toolset? Knowing your audience helps tailor the course content and delivery methods.

Learning Objectives:

- Establish clear and measurable learning objectives based on the target audience and chosen tools. Refer to the course objectives section we discussed earlier for a foundation, and customize them further for your specific course.

Content Selection and Structure:

- **Content Scope:** Choose the software development tools you'll cover based on your audience and course goals. Consider including a mix of essential and advanced tools for well-rounded learning.
- **Structure and Flow:** Organize the course content logically, progressing from foundational concepts to more advanced topics.
    - Start with an introduction to various software development tool categories and their functionalities within the SDLC.
    - Gradually delve deeper into each chosen tool, focusing on core functionalities, practical applications, and best practices.

Instructional Methods:

- **Variety is Key:** Employ a diverse range of instructional methods to cater to different learning styles and keep students engaged.
    - Include instructor-led lectures for core concepts, interactive workshops for hands-on practice, video tutorials for visual learners, and group discussions to encourage knowledge sharing.
- **Balance Theory and Practice:**
    - Provide a strong foundation in theoretical knowledge, but ensure a significant portion of the course involves practical exercises and hands-on activities.
    - Students learn best by doing, so allow them to experiment with the tools and apply their newfound knowledge to real-world scenarios.

Assessment and Evaluation:

- Integrate formative and summative assessments throughout the course.
    - Formative assessments like quizzes, short assignments, and code reviews provide feedback opportunities and help students gauge their understanding.
    - Summative assessments like final exams or projects demonstrate mastery of the learning objectives.

Additional Considerations:

	• **Real-World Case Studies:** Showcase how professional developers leverage the covered tools in real-world projects. This provides context and demonstrates the practical applications of the learned skills. • **Industry Trends:** Incorporate discussions on emerging trends in software development methodologies and how these trends influence the use of development tools. • **Continuous Learning:** Encourage students to develop strategies for staying updated with the ever-evolving landscape of software development tools. ○ Recommend resources like online tutorials, industry publications, and developer communities. **Course Delivery Options:** • **Traditional Classroom:** Offer in-person lectures, workshops, and hands-on labs to create a collaborative learning environment. • **Online Learning:** Develop an online course with video lectures, interactive modules, and online assessments for flexible learning. • **Blended Learning:** Combine elements of in-person and online learning, offering a hybrid approach that caters to various learning preferences and schedules.

6. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3 hours/ In weeks	Overview of different UML diagrams and their purposes.	**Introduction Software Developm Tools**	Theoretical and practica lectures	Theoretical exams + practical assessment + practica exams
2	3 hours/ In weeks	Modeling objects and types of UML Representing class relationships (inheritance, association, aggregation, composition) using UML notation.	Understanding Fundamentals of UM	Theoretical and practica lectures	Theoretical exams + practical assessment + practical exams
3	3 hours/ In weeks	use case view structural view Behavioral view Implementation view Environment view How do use scenario Understanding use cases and their role in capturing user interactions with a system.	**Use Case Diagrams**	Theoretical and practica lectures	Theoretical exams + practical assessment + practical exams

		Creating use case diagrams to represent actors, use cases, and relationships. Specifying use case details with preconditions, postconditions, and flow of events.			
4	3 hours/ In weeks	Flow of events Example of use case part1 Important use case	Use case part-1	Theoretical and practica lectures	Theoretical exams + practical assessment practical exams
5	3 hours/ In weeks	Understanding <<include relationshi Understanding <<exte relationship System boundary diagram	Use case Part 2	Theoretical and practica lectures	Theoretical exams + practical assessment practical exams
6	3 hours/ In weeks	-UML activity diagra -Example: processing order -Parallel activities	Activity diagrams par	Theoretical and practica lectures	Theoretical exams + practical assessmen practical exams
7	3 hours/ In weeks	-Example: enrollment university - swimlane Guideline - advantage and disadvantage of activi diagram	Activity diagram part	Theoretical and practica lectures	Theoretical exams + practical assessment practical exams
8	3 hours/ In weeks	-Understanding class diagram -Static relationships -Aggregation and Composition class diagram -attributes and operations - multiplicity diagram	Class Diagram	Theoretical and practica lectures	Theoretical exams + practical assessment practical exams
9	3 hours/ In weeks	Exam#1(Chapters 1, 2 3)	Exam mid_1	Theoretical and practica lectures	Theoretical exams + practical assessmen practical exams
10	3 hours/ In weeks	Relationships of class diagram	Class diagram examples	Theoretical and practica lectures	Theoretical exams + practical assessmen practical exams

11	3 hours/ In weeks	UML example 2: fligl booking using class diagram	Class diagram additional examples	Theoretical and practica lectures	Theoretical exams + practical assessmen practical exams
12	3 hours/ In weeks	-Uses state diagram -Basic components - fork and Join	State diagram	Theoretical and practica lectures	Theoretical exams + practical assessmen practical exams
13	4 hours/ In weeks	-Self-transition -steps for developme state diagram -examples	State diagram	Theoretical and practica lectures	Theoretical exams + practical assessment practical exams
14	4 hours/ In weeks	Exam2	Exam Mid_2	Theoretical and practica lectures	Theoretical exams + practical assessment practical exams
15	4 hours/ In weeks	Final Exam	Final Exam	Theoretical and practica lectures	Theoretical exams + practical assessment practical exams

7. Course Evaluation

Conducting daily, monthly exams and daily evaluation in addition to the practical part in the laboratory. The pursuit grade is 40% and the final exam grade is 60%.

8. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**1."The Unified Modeling Language Reference Manual" by Grady Booch, James Rumbaugh, and Ivar Jacobson** **2. "Using UML: Practical Object-Oriented Design with UML" by Robert B. France and David Harel**
Main references (sources)	1-Object-Oriented Systems Analysis and Design Using UML 4th edition By Simon Bennett, Ray Farmer, Steve McRobb , 2010 2- Learning UML 2.0, by Russ Miles, Kim Hamilton, 2006 3- The Elements of UML 2.0 Style by Scott W. Amb 2005.
Recommended books and references (scientific journals, reports...)	Various research works in internet
Electronic References, Websites	www.uml.org

Data Compression Course Description Form

1. Course Name:
Data Compression
2. Course Code:
452 CDCOM
3. Semester / Year:
2nd Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
20/3/2024
5. Available Attendance Forms:
20/3/2024
6. Number of Credit Hours (Total) / Number of Units (Total)
(BY 2 ٢ ٤) ¾
7. Course administrator's name (mention all, if more than one name)
Name: Pro. Dr. Ghadah K. Al-Khafaji Email: ghada.toma@sc.uobaghdad.edu.iq Name: Dr. Huda M. Radha Email: huda.rada@sc.uobaghdad.edu.iq
8. Course Objectives

Course Objectives	1- Understand how to reduce data by exploiting redundancy(s). 2- Using with different compression methods and techniques. 3- Understanding the compression mechanism for different types of data. 4- The student's knowledge encountered the data compression process. 5- Understanding and be familiar with standard compression techniques. 6- Learn about standard data compression applications for Biometric application.

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation m
			1- Introduction to data compression of lossless and lossy base, the need, how to solved the problem in image audio, video and text, Application of compression and models of data compression. 2- Redundancy Types of all data, Human Visual System and Fidelity Criteria. 3- Image Compression Structure with Transform Coding & Spatial coding Mapper/de-mapper. 4- Image Compression Structure with Scalar (uniform/non-uniform) &Vector Quantizer.		

			5- Image Compression Structure with Statistical Lossless coding Techniques of Entropy Based: Huffman Coding and Dictionary Lossless coding Techniques LZW (LZW77, LZW78) along Information Theory 6- First Exam 7- Modeling and coding (Autoregressive model Standard and non-standard techniques/lossy & Lossless methods for natural images Compression Applications: Block truncation coding, bit plane slicing, and JPEG) 8- Color image compression: Introduction to color images, redundancy and color system structure. 9- Video compression Techniques: Introduction, types and compression structure. 10-Motion Estimation Techniques (frame replenishment) GOP structure, spectral prediction 11- Second Exam 12- Text Compression 13- Audio Compression 14- Real world applications for medical & bioinformatics Wavelet based Compression & JPEG2000 15- Mobile multimedia computing		

11. Course Evaluation	
Daily and monthly exams and Quizzes, class participation and attendance, in addition to preparing practical rep projects, so that the endeavor is 50% and the final exam is 50%.	
12. Learning and Teaching Resources	
Required textbooks (curricular boo if any)	1- Gerardus, B. 2020. Data Compression A Complete Guide - 2020 Editio 5STARCooks 2- Gonzalez, R. C. and Woods, R. E. 2017. Digital Image Processing Usi MATLAB. 3rd edn. Gatesmark 3- Sayood, K. 2018. Introduction to Data Compression. 3rd5th edn. Elsevi Publication 4- Gonzalez, R. C. and Woods, R. E. 2017. Digital Image Processing 4th e Pearson 5-Shih, F. Y. 2010. Image Processing and Pattern Recognition Fundamen Techniques 6-Chapman, N. and Chapman, J. 2009. Digital Multimedia, 3rd edn 7- David Salomon, “Data Compression – The Complete Reference,” 4th E Springer, 2006
Main references (sources)	
Recommended books and references (scientific journals, reports...)	• Pearlman, William A., and Amir Said," Digital Signal Compression Principles and Practice", Cambridge University Press, 2011. • Salomon, David, and Giovanni Motta," Handbook of data compres Springer Science and Business Media, Fifth Edition, 2010. • Hoffman, Roy, "Data compression in digital systems", Springer and Business Media, 2012

Electronic References, Websites	

Course Description Form

1. Course Name: data mining
2. Course Code:
3. Semester / Year: 4th year 2nd semester
2nd Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total) 60
7. Course administrator's name (mention all, if more than one name)
Name: Tareef kamil mustafa Email: tareef.mustafa@sc.baghdad.edu.iq
8. Course Objectives

Course Objectives	• **.....** • **.....** • **.....**

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1		1-Introduction to the cou			
2		2-Data analysis and			
3		normalization			
4		3-Data Warehouse			
5		4-Data mining concepts 1			
6		5-Data mining concepts 2			
7		6-Association rule			
8		7-Apriori algorithm			
9		8-Naïve Bayesian 1			
10		9-Naïve Bayesian 2			
11		10-Linear regression			
12		11-Text mining			
		12-Text mining algorithn			

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Data mining text book
Main references (sources)	lectures
Recommended books and references (scientific journals, reports...)	Jiawei Han & Micheline Kamb (2013),3rd edition Data Mining: Conce and Techniques",
Electronic References, Websites	

Robotics Control Course Description Form

1. Course Name:	
Robotics Control	
2. Course Code:	
3. Semester / Year:	
2nd Semester/ 4th Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
01-09- 2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
٢/2	
7. Course administrator's name (mention all, if more than one name)	
Name: Assistant Prof. Dr. Rawaa Dawoud Al-Dabbagh Email: rawaa.hassan@sc.uobaghdad.edu.iq	
8. Course Objectives	
Course Objectives	• To develop skills in robot design, construction, and prototyping. • Understand robot planning and path optimization algorithms for autonomous navigation. • To understand the fundamental principles of robotics, including robot components, sensors, actuators, and control systems. • To develop problem-solving and critical thinking skills through hands-on robot projects and challenges. • To gain an awareness of current trends and advancements in robotics, such as machine learning, swarm robotics, and humanoids.
9. Teaching and Learning Strategies	
Strategy	• Lectures: Traditional lectures can be used to deliver theoretical concepts, principles, and frameworks related to robotics. Lectures can be supplemented with visual aids, demonstrations, and examples to enhance understanding. • Hands-on Lab Work: Practical lab sessions allow students to apply theoretical knowledge by working with robots and programming languages. These hands-on activities provide opportunities for experimentation, troubleshooting, and skill development. • Group Projects: Assigning group projects encourages collaboration, problem-solving, and teamwork. Students can work together to design, build, and program robots to accomplish specific tasks or challenges. This fosters practical application, critical thinking, and project management skills.

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
١	٢		Introduction - What are Robots?, What are Robotic Paradigms?		
٢	٢		Planning in Robotics – Definition of Path Planning and Path planning algorithms, node relaxation		
٣	٢		Dijkstra's algorithm, Dijkstra's algorithm and the multiple start points		
٤	٢		The A* algorithm in path planning		
٥	٢		Variants of A* algorithm (Beam search, Iterative Deepening A*, Dynamic weighted A*)		
٦	٢		Analysis of heuristic functions (admissible, consistent, and dominance)		
٧	٢		Incremental heuristic search - D* Lite algorithm		
٨	٢		**Mid-term Exam**		
٩	٢		Planning: Problem decomposition, An example domain: The blocks world		
١٠	٢		The component of planning system and applying the rules, Planning methods (Planning with state-space search, Goal stack planning)		
١١	٢		Planning and machine learning, Types of machine learning		
١٢	٢		Robot Learning and Adaptation - Reinforcement learning (Q learning) for robot behavior		
١٣	٢		Emerging Trends and Future of Robotics - Cutting-edge research topics in robotics, Emerging technologies in robotics (e.g., soft robotics, bio-inspired robotics), Implications of robotics in healthcare, transportation, and other industries		
١٤	٢		Robot Design and Construction - How does a robot sense its environment? Types of sensors,		

			Build a simple ١٥circuit for object detection sensor using Arduino		
١٥	٢		Robot Design and Construction - How does a robot act in its environment? Types of motors, Build a simple circuit for servo motor control using Arduino		
١٦	٢		**Preparatory week before the final Exam**		

11. Course Evaluation
Distributing the score out of ٤٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	Russell, Stuart and Norvig, Peter. Artifi Intelligence: A Modern Approach. 3: Prent Hall, 2010.
Recommended books and references (scientific journals, reports...)	Spong, Mark W., Hutchinson, Seth, Vidyasagar, M. Robot Modeling and Cont 2nd Edition: Wiley, 2020.
Electronic References, Websites	https://www.edx.org/learn/robotics