اللائحة الأكاديمية الداخلية

لكلية الهندسة ـ جامعة السويس

مرحلة البكالوريوس

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المحتويات

مقدمة

يعتبر التعليم الهندسى قاطرة التقدم الصناعى والتطور التكنولوجى ومفتاح التنمية الحضرية، كما أنه يقود التخطيط العصرى نحو التقدم والرقى. وتعد مهنة المهندس من أرقى المهن ليس من وجهة نظر المهندسين فحسب ولكن لدى جميع المهن الأخرى. فهى المهنة التى تنال التقدير والإحترام والإعجاب من الجميع، هكذا كانت بالأمس القريب، عندما أنشأ محمد على مدرسة المهندس خانة بالقلعة عام 1816م لتدريب وإعداد المتخصصين فى المساحة، ثم مدرسة المهندس خانة ببولاق عام 1834م لتخريج المتخصصين للعمل فى المشروعات المدنية والعسكرية على السواء، وظلت تؤدى رسالتها حتى أغلقت فى مطلع عهد محمد سعيد باشا (عام 1854م) مع غيرها من المدارس، ثم أعيد دراسة الهندسة عام 1858م فى مدرستين منفصلتين إحداهما لهندسة الرى بالقناطر الخيرية والأخرى للعمارة بالقلعة ثم أغلقتا مرة أخرى عام 1861م. وفى يونيو سنة 1866م فتحت مدرسة شاملة للرى والعمارة بسراى الزعفران بالعباسية ثم نقلت إلى درب الجماميز فى سبتمبر سنة 1867م. وفى سنة 1886م شكلت نظارة المعارف العمومية بالاتفاق مع نظارة الأشغال العمومية، لجنة قامت بسن قانون ومنهج لإدارة المدرسة قضى بأن يكون بالمدرسة قسم للرى، وآخر للعمارة وأن تكون مدة الدراسة فى كل منهما خمس سنوات منها سنة إعدادية، وجعل التخصص فى السنتين الأخيرتين. وقد ألغيت بعد ذلك السنة الإعدادية فى سنة 1892م وبقيت مدة الدراسة أربع سنوات وبقي التخصص كما هو فى السنتين الأخيرتين. وفى سنة 1896م ألغى نظام التخصص، وجعلت المدرسة قسماً واحداً وإستمر العمل بهذا النظام مع بعض تعديلات طفيفة أدخلت عليه من وقت لآخر. وتطورت الأمور خلال القرنين العشرين والواحد وعشرين بحيث وصل عدد المؤسسات والجهات التى تقوم بإعداد مهندسين يصل إلى حوالي مائة كلية ومعهد هندسى، 25% منها فقط يمثل كليات الهندسة التى تتبع الجامعات الحكومية. ومصر بما لديها من خطط إستراتيجية طموحة فى السنوات القادمة لا يمكن بنائها إلا على أساس هندسى وتكنولوجي متطور، حيث تعتبر تخصصات الهندسة قاسماً مشتركاً فى جميع الانشطة المجتمعية وخطط التطوير والتنمية، كما أنها أساس لإستيعاب التطورات العالمية المتلاحقة، الأمر الذى يجعل الدولة تتحمل مسئولياتها فى إعداد الكوادر الهندسية لأهمية هذا القطاع على المستوى القومى وذلك من خلال إنشاء كليات الهندسة القادرة على تخريج كوادر هندسية مؤهلة تاهيلاً عالياً لسد الحاجة فى بعض التخصصات الهندسية ولتحقيق رغبة الطالبين فى الإلتحاق بالتعليم الهندسى ولإعادة هيكلة ومكانة المهنة داخلياً وخارجياً.

أولاً: رؤية الكلية

أن تقوم بتقديم البرامج الدراسية والأبحاث فى العلوم الهندسية على المستوى المحلى والإقليمى والدولى.

ثانياً: رسالة الكلية

تسعى كلية الهندسة بجامعة السويس لتكون مركزاً لتطوير برامج الدراسة والبحث وتقديم الإستشارات فى التخصصات الهندسية المختلفة وإعداد الكوادر ذات الكفاءة العالية القادرة على المنافسة محلياً واقليمياً ودولياً.

ثالثاً: أهداف الكلية

الهندسة هى المهنة التى تنطبق فيها المعرفة بالعلوم الأساسية (الرياضيات – الفيزياء - الكيمياء وغيرها) بجانب المعرفة المكتسبة من خلال الدراسة الهندسية والخبرة والممارسة من أجل تطوير وإبتكار الطرق والأساليب والآلات والأجهزة من أجل الإستخدام الأمثل لمواد وموارد وقوى الطبيعة لنفع المجتمع البشرى.

لذلك تعمل الكلية من خلال أقسامها العلمية التى تغطى معظم التخصصات التى يحتاج إليها سوق العمل على تحقيق الأهداف التالية:

- إستغلال كافة إمكانيات الكلية لتعليم الطلاب أساسيات وتقنيات العلوم الهندسية وإكسابهم المهارات اللازمة للقيام بمهامهم العملية المستقبلية بإستخدام كل ما هو قائم وجديد فى مجال تخصصهم الهندسى.
- إعداد خريج قادر علي تطبيق العلوم الهندسية وأساليبها في الحياة العملية.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

– إعداد خريج قادر علي إتخاذ القرار والتعامل مع الأزمات.

– إعداد خريج ملم بوسائل التكنولوجيا الحديثة وتكنولوجيا المعلومات وكيفية التعامل معها.

– إعداد خريج قادر علي المنافسة في سوق العمل في ظل الظروف الجديدة والمتغيرة للمجتمع الدولي.

– إعداد خريج قادر على تعلم التكنولوجيات الجديدة والعمل بها.

– دعم وتزويد طلاب الدراسات العليا والبحوث بكافة الإمكانيات لفهم وإدراك المفاهيم الحديثة لتطوير وإبداع طرق حديثة وتوسيع قاعدة المعرفة الأساسية.

– إنشاء قاعدة عريضة من المتخصصين وتشجيع البحث العلمى التطبيقى وإجراء بحوث مبتكرة فى التخصصات الهندسية.

– تزويد اجهزة الحكومة والمصانع والمجتمع المدنى والإستثمارى بكل ما هو جديد ومتطور فى التخصصات الهندسية لخدمة خطط التنمية فى الدولة بوجه عام ومنطقة خليج السويس والبحر الأحمر وسيناء ومحور قناة السويس بشكل خاص.

– تقوم كوادر كلية الهندسة بتقديم الإستشارات والخبرات للشركات والمصانع بالمنطقة الصناعية بشمال غرب خليج السويس والبحر الأحمر وسيناء ومحور قناة السويس بشكل خاص ومصر بشكل عام، لحل الكثير من المشكلات التطبيقية التى قد تعترضها فى المجالات الهندسية.

– المشاركة فى تدريب الكوادر الفنية والهندسية بقطاعات الدولة والمجتمع لتطوير أدائها والنهوض بها.

– التفاعل داخلياً وخارجياً مع أحدث ما وصلت اليه الدراسات والبحوث والإبتكارات الهندسية من خلال المشاركة فى المؤتمرات الدولية والمحلية وعقد ورش العمل والندوات والمؤتمرات بالكلية.

– تبادل الخبرات والمنفعة من خلال إبرام العقود والإتفاقيات مع الهيئات والمؤسسات العلمية والعملية المحلية والدولية.

– المساهمة فى تطوير وصيانة الجامعة وكلياتها ومنشآتها.

– المساهمة فى دفع عجلة الإنتاج بأساليب وتقنيات حديثة على مستوى الجامعة ووحداتها وكذلك على مستوى الدولة والمنطقة.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

الباب الأول
أقسام الكلية والدرجات العلمية

مادة (1):
تتكون الكلية من الأقسام العلمية وشعبها على النحو التالي: -

1- الهندسة المدنية (Civil Engineeing)

ويتضمن المجالات العلمية التالية:

الهندسة الانشائية: تختص بتصميم وتنفيذ المنشآت المعدنية والخرسانية والخشبية، السكنية والصناعية.

الهندسة الجيوتقنية: وتختص بدراسة الخواص الكيميائية والفيزيائية والميكانيكية لمواد التربة والصخور وتقنياتها، ودراسة تصميم الأساسات والأنفاق والمنشآت المطمورة وتسمى بـ" مكيانيكا التربة "أو" الجيوتكنيك".

هندسة ادارة التشييد: وتختص بدراسة الكميات وتنفيذ المنشآت بأقل كلفة ممكنة وأسرع وقت ممكن وإدارة موقع العمل.

هندسة المساحة والجيوديسيا: وتختص بدراسة الأبعاد المساحية والمواقع الجغرافية الهندسية.

الهندسة الصحية: وتختص بتصميم وتشغيل أنظمة الصرف الصحي ومحطات المياه.

هندسة الطرق والنقل والمرور: وتختص بتصميم وإنشاء الطرق وهندسة النقل وهندسة المرور.

هندسة الرى والهيدروليكا والموارد المائية: وتختص بدراسة أساليب التحكم في أنواع الري المختلفة والمنشآت المائية الزراعية ودارسة خصائص السوائل وأثرها على المنشئات "مثل أثر الرياح على المباني أو ضغط المياه على السدود وما إلى ذلك وتصميم المنشأت المائية والبنى التحتية والأساسات وكذلك التصاميم الهيدروليكية.

هندسة الموانى والمنشآت البحرية: وتختص بتصميم وتنفيذ الموانى والمنشآت البحرية من أرصفة وحواجز أمواج وكذلك سبل حماية الشواطئ.

2- الهندسة الميكانيكية (Mechanical Engineering)

    أ.   شعبة القوى الميكانيكية

(Mechanical Power Engineering)

وتحتوي الشعبة على التخصصات الدقيقة التالية: هندسة إنتقال الحرارة، هندسة التبريد والتكييف، هندسة الإحتراق والإنفجارات، هندسة محطات القوي وإقتصادياتها، هندسة التحكم الهيدروليكي، هندسة السريان، ونظم الطاقة المتجددة.

ب. شعبة التصميم الميكانيكى والانتاج

(Mechanical Design and Production)

وتحتوي الشعبة على التخصصات الدقيقة التالية: تصميم وتصنيع المنتجات، تصميم خطوط الإنتاج ومتابعتها وتخطيط العمليات، إجراء دراسات الجدوى، القيام بأعمال الفحوص والإختبارات والقياسات، تنفيذ ومتابعة المشروعات الهندسية، تطبيق نظم الجودة المختلفة في المؤسسات والهيئات، التفتيش على مدى متابعة تطبيق الخطوات التنفيذية خلال مرحلة الإنتاج.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

مادة (2):

تمنح جامعة السويس بناء على طلب مجلس الكلية درجة البكالوريوس فى أحد التخصصات الآتية:

1- الهندسة المدنية (Civil Engineeing)

2- الهندسة الميكانيكية (Mechanical Engineering)

أ. شعبة القوى الميكانيكية (Mechanical Power Engineering)

ب. شعبة التصميم الميكانيكى والإنتاج (Mechanical Design and Production)

مادة (3):

يدخل في إختصاص كل قسم تدريس المقررات ذات الرمز الخاص بـه وذلك طبقاً للجداول المرفقة بالمقررات.

مادة (4):

يتولي مجلس القسم المنوط به تدريس مقررات الإنسانيات واللغات الأجنبية وأيضاً مقررات العلوم والرياضيات الهندسية.

مادة (5):

أ. تبين الجداول الموضحة بالمادة (20) المقررات الدراسية.

ب. تبين المادة (21) المحتوى العلمي لكل مقرر.

ج. يجوز تعديل محتوى أى مقرر لمواكبة كل ما هو جديد بعد موافقة كل من مجلسـى القسـم المختص والكلية.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

4

الباب الثانى
الأحكام العامة

مادة (6):

تقبل كلية الهندسـة الطلاب الحاصــلين على الثانوية العامة شـعبة رياضـيات، ومن خلال القواعد المنظمة لتنسـيق القبول بالجامعات المصــرية والتي يضــعها المجلس الأعلى للجامعات ويطبقها مكتب تنسـيق القبول بالجامعات على الطلاب الحاصلين على الثانوية العامة والشهادات المعادلة لها.

مادة (7):

الدراسـة فى كلية الهندسـة نظامية ولا يجوز فيها الإنتسـاب وتخضـع عملية متابعة حضـور الطلاب لشروط ولوائح تحددها إدارة الكلية.

مادة (8):

الدراسة فى كلية الهندسة باللغة الإنجليزية. ويجوز تدريس مقررات الإنسانيات باللغة العربية إذا اقتضى الأمر لذلك.

مادة (9):

نظام الدراسـة بالكلية هو نظام الفصلين الدراسـيين "Two Semesters" وفقاً لنظام سـاعات الاتصـال "Contact Hrs" مع الأخذ في الإعتبار الوحدات المعتمدة الأوربية والأمريكية أو كليهما، ومع النص على ما يكافىء كل مقرر من هذه الوحدات مع تبنى اجمالى ساعات عمل الطالب "Total Student Work Load" فى كل مقرر، وذلك تماشياً مع نظم التعليم الهندسى الحديث على مستوى العالم وذلك لضمان الأهداف التالية:

– تسهيل إنتقالية التعليم وتنافسية الخريج فى أسواق العمل.
– التحول من حالة التعليم "Education" إلى حالة التعلم "Learning" تمشــياً مع نظم التعليم العالى السائدة حالياً فى العالم.
– التحول الى حالة الطالب هو محور العملية التعليمية "Student-Centered Education"
– تنمية الجدارات العامة "Generic Competencies" لضمان إكتساب الطالب المهارات التالية:
    o مهارات شخصية "Personal Skills"
    o مهارات مرتبطة بالعلاقات الشخصية مع الاخرين "Inter-Personal Skills"
    o مهارات ذات علاقة بالإحترافية فى الأداء المهنى "Professional Skills"
    o مهارات مرتبطة بريادة وبدء الأعمال والمشروعات "Entrepreneurial Skills"
    o مهارات مرتبطة بالعولمة والتمويل للطالب "Internationalization & Funding Skills"
حيث تعد هذه الجدارات من أهم مواصفات الخريج طبقاً لمعايير الجودة والإعتماد.
– صياغة اللائحة والشهادات لتكون متوافقة مع النظم الدراسية الأخرى السائدة فى المناطق الاقتصـادية الرئيسية فى العالم لتسهيل تنافسية وتنقلية الخريج.
– الإستفادة من غزارة وتنوع مصادر التعلم المتاحة للطالب حالياً.
– الإرتقاء بجودة التعليم الهندسى عن طريق قياس جودة المخرجات التعليمية والتأكد من مواكبتها لأفضل الممارسات العالمية.
– رفع تنافسية الخريج المصري فى أسواق العمل الإقليمية والدولية.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

مادة (10):

- تنقسم الدراسة في الكلية إلى خمسة مستويات دراسية (0-4) (إعدادي – بكالوريوس) وفقاً لنظام ساعات الإتصال "Contact Hrs"، ويتضمن كل مستوي (عام جامعي) فصلين دراسيين رئيسيين يفصل بينهما عطلة نصف العام. ويتكون كل فصل دراسي من 25-28 ساعة إتصال لتتوافق مع النظم العالمية حيث أن:

18 Cr. Hrs = 28 Contact Hrs

- تعادل درجة البكالوريوس في أي من تخصصات الكلية بنظام ساعات الاتصال "Contact Hrs" مقررات تكافئ 250-280 ساعة اتصال حسب طبيعة كل تخصص وكما هو وارد في جداول المقررات الدراسية الملحقة في هذه اللائحة.

- إجمالى درجات مقررات الفصل الدراسى الواحد 750 درجة خلال المستويات (0-4) وبذلك يكون اجمالى درجات المجموع التراكمى لجميع الفصول الدراسية 7500 درجة.

- تبدأ الكلية بالمستوي الإعدادي العام (المستوي صفر) لجميع الطلاب. ويوزع الطلاب المنقولون من المستوي الإعدادي إلى المستوي الأول على الأقسام العلمية وعلى شعب التخصص المختلفة بها وفقاً للنظام الذي يقره مجلس الكلية، وأقسام الكلية وشعبها كالتالى:

1- الهندسة المدنية:
وتبدأ الدراسة بها إعتباراً من المستوي الأول وحتى المستوي الرابع.

2- الهندسة الميكانيكية:
وتبدأ الدراسة بها إعتباراً من المستوي الأول ثم تتشعب الدراسة إعتباراً من المستوي الثالث إلى شعبتين:

- شعبة القوى الميكانيكية (Mechanical Power Engineering)
- شعبة التصميم الميكانيكى والإنتاج (Mechanical Design and Production)

والجدول التالى يبين الأقسام والشعب بالكلية:

المستوي			
المستوي (0) إعدادى	عـــــــــــــــــــــــــــــــــام		
المستوي الأول و المستوي الثاني	الهندسة المدنية (Civil Engeering)	الهندسة الميكانيكية (Mechanical Engineering)	
المستوي الثالث		القوى الميكانيكية (Mechanical Power Engineering)	التصميم الميكانيكى والإنتاج (Mechanical Design and Production)
المستوي الرابع			

مادة (11):

يجوز أن يعفى الطالب فى مرحلة البكالوريوس من حضور بعض مقررات الدراسة أو من أداء الامتحانات فيها وذلك فيما عدا مقررات وإمتحانات المستوي النهائي إذا ثبت أنه حضــر مقررات دراسية تعادلها أو أدى

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

بنجاح إمتحانات تعادلها فى كلية جامعية أو معهد علمي معترف بهما من الجامعة ويكون الإعفاء بقرار من رئيس الجامعة بعد موافقة مجلس شــئون التعليم والطلاب والطلاب بناء على إقتراح مجلس الكلية بعد أخذ رأى مجلس القسم أو مجالس الأقسام المختصة وذلك دون الإخلال بقانون تنظيم الجامعات.

مادة (12):

أ- يؤدى طلاب المستوي الإعدادي (المستوى صفر) تدريباً خلال العطلة الصيفية فى الورش الميكانيكية والرسـم لمدة أربعة أسـابيع داخل الكلية تحت إشراف أعضاء هيئة التدريس المتخصـصين. يقدم كل طالب تقريراً بعد نهاية تدريب الورش وتدريب الرسـم ويتم مناقشـته وتقييمه بجلسـات شفوية من 50 درجة تضـاف إلي درجات الطالب الإجمالية خلال المستوي الأول وتضاف إلي المجموع التراكمي في نهاية المستوي الرابع (20 درجة للرسم أثناء حضور التدريب + 15 درجة لتقرير عن الورش يقدمه الطالب في نهاية التدريب + 15 درجة مناقشــة شـفوية للطالب في نهاية التدريب يمتحنه فيها أعضـاء هيئة التدريس بقسم الهندسة الميكانيكية).

ب- يؤدى طلاب المسـتويين الثاني والثالث تدريباً عملياً خلال العطلة الصـيفية فى مجال التخصـص لمدة ثمانية أسـابيع (4+4) داخل الكلية أو خارجها (تدريب مصـانع لاقسام الميكانيكا، وتدريب فى المواقع الإنشـائية المختلفة لقسـم مدنى) تحت إشراف أعضـاء هيئة التدريس المتخصـصـين، ويقدم كل طالب تقريراً بعد نهاية التدريب ويتم مناقشـته وتقييمه بجلسـات شفوية من 50 درجة تضــاف الي درجات الطالب الإجمالية خلال المسـتويين الثالث والرابع علي الترتيب وتضـاف إلي المجموع التراكمي في نهاية المستوي الرابع (15 درجة لتقييم ومتابعة حضور الطلاب التدريب من قبل أعضاء هيئة التدريس بالكلية حسـب التخصـص + 15 درجة تقرير يقدمه الطالب في نهاية التدريب + 20 درجة مناقشـة شفوية للطالب في نهاية التدريب يقوم بها أعضاء هيئة التدريس بالكلية حسب التخصص).

جـ- يقرر مجلس الكلية بناءً على إقتراح مجلس القسـم كيفية تقسـيم الطلاب إلى مجموعات أثناء التدريب الصـيفى، وأسـلوب الإشـراف عليهم وتقييم أدائهم وكذا المكافآت المالية للقائمين على تنفيذ هذا التدريب داخل الكلية وخارجها وبدلات الانتقال للإشراف على التدريب الخارجى.

هـــ- رسوب الطالب في التدريب الصيفي لا يؤثر علي إنتقاله الي المستوي الأعلي ولكن يشترط أن يؤدى الطالب كل التدريبات الصيفية بنجاح قبل حصوله على درجة البكالوريوس.

مادة (13):

أ- يقوم طلاب المستوي الرابع بإعداد مشروع البكالوريوس وتحدد مجالس الأقسام المختصة موضوعاته، وتخصص لتنفيذه فترة زمنية إضافية بعد الإنتهاء من أعمال الإمتحان التحريرى للفصل الدراسى الثانى ومدتها أربعة أسابيع بمعدل عدد 8 ساعات إتصال أسبوعياً.

ب- يقرر مجالس الأقسـام العلمية كيفية تقسـيم الطلاب إلى مجموعات أثناء تنفيذ المشـاريع وأسـلوب الإشراف عليهم ومناقشتهم فى جلسات الإختبار الشفوي.

جـــ- يقرر مجلس الجامعة المكافآت المالية للمسئولين عن تنفيذ هذه المشاريع وصرف بدل جلسات الإختبار الشـفوى للممتحنين وكذلك صـرف بدلات الإنتقال للممتحنين من الخارج بناءً على إقتراح مجلس الكلية فى ضوء القواعد والقوانين المنظمة.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

مادة (14):

تعقد إمتحانات النقل وإمتحان المستوي النهائي فى نهاية كل فصل دراسى فى المقررات التى درسها الطالب فى المستوي. ويشترط لدخول الطالب إمتحان المقرر أن يكون مستوفياً نسبة حضور لا تقل عن 75% ويصدر مجلس الكلية بناءً على طلب مجالس الأقسـام المختصـة قراراً بحرمان الطالب من التقدم للإمتحان فى المقررات التى لم يسـتوف فيها نسـبة الحضـور، وفى هذه الحالة يعتبر الطالب راسـباً فى المقررات التى حرم من التقدم للإمتحان فيها إلا إذا قدم الطالب عذراً يقبله مجلس الكلية فإنه يعتبر غائباً بعذر مقبول.

مادة (15):

أ- يتم تقييم المقررات بالحروف والأرقام والدرجات المناظرة كنسبة مئوية على النحو التالى:

النسبة المئوية الحاصل عليها الطالب	التقدير الوصفى
85% فأكثر	إمتياز
من 75% الى أقل من 85%	جيد جداً
من 65% الى أقل من 75%	جيد
من 50% الى أقل من 65%	مقبول
اقل من 50%	راسب

ب- حساب التقدير العام: يتم حساب التقدير العام للطالب بناءً على المعدل التراكمي العام طبقاً للجدول التالى:

النسبة المئوية الحاصل عليها الطالب	التقدير الوصفى
85% فأكثر	إمتياز
من 75% الى أقل من 85%	جيد جداً
من 65% الى أقل من 75%	جيد
من 50% الى أقل من 65%	مقبول
اقل من 50%	راسب

ت- يشترط لنجاح الطالب في أى مقرر تحقيق الأمرين التاليين:
- حصوله على درجة لا تقل عن 40% من درجة الإمتحان التحريرى.
- المجموع الكلي للدرجات الحاصل عليها في المقرر (أعمال سنة + عملى + شفوى + تحريري) لا يقل عن 50% من الدرجة الكلية للمقرر.

ث- يعتبر الطالب ناجحاً عندما ينجح في جميع مقررات مستواه وينتقل إلي المستوي الاعلي.

ج- ينقل الطالب من المستوي المقيد به إلي المستوي الأعلي عندما ينجح في جميع مقررات مستواه بالإضافة إلي المقررات من المستوي الأدني في حالة وجود مقررات تخلف. أيضاً ينقل الطالب إلي المستوي الأعلي عندما يرسب في ما لايزيد عن مقررين فقط من مقررات المستوى المقيد به أو مقررات التخلف من مستوي أدني. الرسوب في تدريب الورش أو تدريب الرسم أو التدريب الميداني لا يؤثر علي الإنتقال إلي المستوي الأعلي ولكن لابد من النجاح في التدريب بكل أنواعه قبل التخرج.

ح- يحسـب التقدير العام للطلاب فى درجة البكالوريوس على أسـاس المجموع الكلى للدرجات شـاملة إمتحانات العملى والشـفوى التى حصـلوا عليها فى كل السـنوات الدراسـية، كما يتم ترتيبهم وفقاً لهذا المجموع.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

خ- يحصل الطالب على مرتبة الشرف إذا كان تقديره في المستويات الدراسية (1-4) لا يقل عن جيد جداً وبشرط عدم رسوبه في أى مقرر طبقا لقانون تنظيم الجامعات.

د- الحد الأقصى للدرجات فى المقررات التى يعيدها الطالب بسبب رسوبه فيها (مقبول) بحد اقصى 64%.

ذ- يعتبر الطالب مفصولاً إذا رسب مرتين متتاليتين في أى مستوي ويحق له الإلتحاق من الخارج بداية من المستوي (1-4) ويحق لطلاب المستوي الرابع دخول دورسبتمبر في المواد الراسب فيها بحد اقصى مادتين طبقاً للقواعد التي تضعها الكلية.

ر- يجوز تحويل الطلاب من وإلى الكلية بنظام الفصلين الدراسيين (ساعات الاتصال) وبين الطلاب الدارسين بنظام الساعات المعتمدة أو غيرها من النظم الدراسية المعمول بها في مصر أو الخارج على أساس المعادلة: 18Cr. Hrs = 28 Contact Hrs أى كل 18 ساعة معتمدة يقابلها 28 ساعة إتصال ويكون مجلس القسم المعنى هو المختص بعمل المقاصة وحساب ساعات الإتصال المقابلة للساعات المعتمدة ويشترط موافقة مجلس الكلية.

يستخدم الجدول التالي مع أسلوب المقاصة بين نظام الساعات المعتمدة ونظام الفصلين الدراسيين لحساب التقديرات المكافئة عند تحويل الطالب بين النظامين.

جدول تكافؤ تقديرات المقررات بين نظامى الدراسة						
جدول تكافؤ تقديرات المقررات عند التحويل من نظام الفصلين الدراسيين الى نظام الساعات المعتمدة				جدول تكافؤ تقديرات المقررات عند التحويل من نظام الساعات المعتمدة الى نظام الفصلين الدراسيين		
نظام الساعات المعتمدة		نظام الفصلين		نظام الفصلين	نظام الساعات المعتمدة	
التقدير	عدد النقاط	النسبة المئوية المناظرة		النسبة المئوية المناظرة	التقدير	عدد النقاط
A⁺	4.00	95% to < 100%		98%	A⁺	4.00
A	4.00	90% to < 95%		93%	A	4.00
A⁻	3.70	85% to < 90%		88%	A⁻	3.70
B⁺	3.30	80% to < 85%		83%	B⁺	3.30
B	3.00	75% to < 80%		78%	B	3.00
B⁻	2.70	71% to < 75%		73%	B⁻	2.70
C⁺	2.30	68% to < 71%		70%	C⁺	2.30
C	2.00	65% to < 68%		67%	C	2.00
C⁻	1.70	60% to < 65%		63%	C⁻	1.70
D⁺	1.30	55% to < 60%		58%	D⁺	1.30
D	1.00	50% to < 55%		53%	D	1.00
F	0.00	0% to < 50%		اقل من 50%	F	0.00

مادة (16):

يتم منح الطالب ما يفيد لإتمامه لمتطلبات التخرج في نهاية أي من الفصول الدراسية التالية:

– التخرج في نهاية الفصل الدراسي الثاني (دور يونيو).

– التخرج في نهاية الفصل الصيفي (دور سبتمبر).

– يسمح للطالب الراسب في ثلاثة مواد أو اكثر من الفصل الدراسي الأول بدخول إمتحانات الفصل الدراسي الثاني. وإذا كان الطالب في المستوي الرابع وأتم جميع متطلبات التخرج في الفصل الدراسي الأول من العام التالي لرسوبه فيكون تخرجه في شهر يونيو.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

الباب الثالث
المقررات الدراسية

مادة (17):

تبين الجداول التالية المقررات الدراسية موزعة على الفصـلين الدراسـيين لسـنوات الدراسـة وعدد السـاعات المخصصة أسبوعياً للمحاضرات والتمارين والدروس العملية وعدد ساعات الإمتحان والنهاية العظمى لدرجات كل مقرر للإمتحانات التحريرية والعملية والشفوية والأعمال الفصلية.

كود الأقسام القائمة بالتدريس بالكلية

Courses	Abbreviations	اسم القسم القائم بالتدريس	مسلسل
HUManities	HUM	كلية الاداب بالجامعة	**1**
PHysics and **M**athematics	PHM	قسم العلوم والرياضيات الهندسية بكلية هندسة البترول والتعدين أو كلية العلوم بالجامعة	**2**
Electrical and **C**omputer **E**ngineering	ECE	أعضاء هيئة التدريس والهيئة المعاونة تخصص هندسة كهربية بالكلية (تحت الإنشاء)	
Civil **E**ngineering	CES	قسم الهندسة المدنية	**3**
Mechanical **P**ower **E**ngineering	MPE	قسم الهندسة الميكانيكية (القوى الميكانيكية)	**4**
Mechanical **D**esign & **P**roduction	MDP	قسم الهندسة الميكانيكية (التصميم الميكانيكى والإنتاج)	**5**

- النظام الكودى للمقررات الدراسية

كود القسم العلمي

كود المستوي (0-4)

كود الفصل الدراسي (1-2)

كود المقرر الدراسي (1-99)
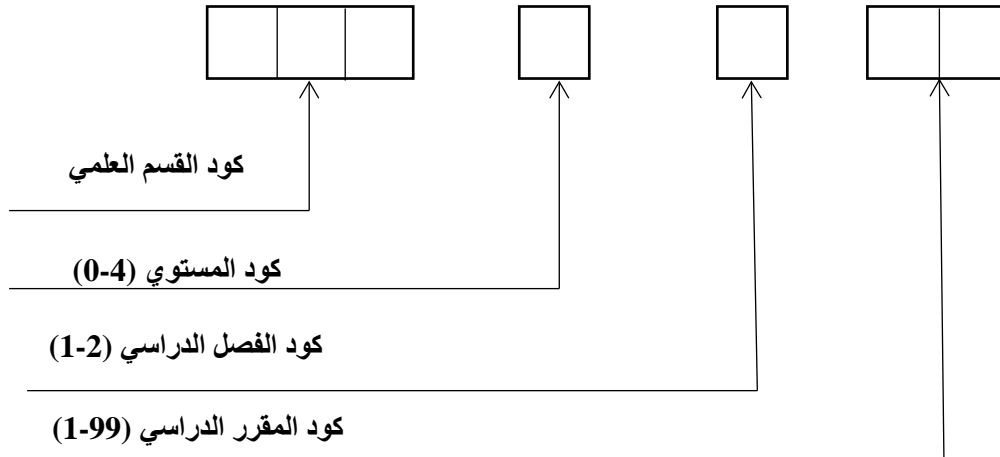
- بالنسبة لمشروع التخرج فيأخذ رقم 4800 ويسبقه كود القسم.
على سبيل المثال (CES4800): مشروع التخرج لبكالوريوس الهندسة المدنية والكود ثابت فى الفصل الدراسى الأول والثانى من المستوى الرابع.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

مادة (18):

يتم توزيع الحمل الدراسى للطالب على النحو التالى: **(إجمالى عدد ساعات الإتصال = 270)**

متوسط عدد ساعات الإتصال	% من إجمالى عدد ساعات الإتصال	المتطلبات
16 - 27	6 - 10	متطلبات الجامعة
60 - 81	22 - 30	متطلبات الكلية
81 - 95	30 - 35	متطلبات التخصص العام
54 - 81	20 - 30	متطلبات التخصص الدقيق
	100%	الإجمالى

المكونات الأساسية	المتطلبات
بناء شخصية شباب الخريجين الثقافية، وتنمية مهاراتهم الشخصية، والإدراك العام بقضايا المجتمع، والتركيز على الهوية والإرتباط بالوطن.	متطلبات الجامعة
الحد الأدنى للعلوم الأساسية، والثقافة الهندسية والعلوم الهندسية الأساسية حول كافة التخصصات.	متطلبات الكلية
العلوم الهندسية الأساسية ومبادىء التصميم والتطبيقات فى التخصص العام (معلومات عن جميع التخصصات الدقيقة).	متطلبات التخصص العام
المهارات والعلوم الهندسية والتصميمات والتطبيقات الهندسية التخصصية.	متطلبات التخصص الدقيق

مادة (19):

تصمم البرامج الدراسية على النحو التالى كنسبة مئوية من إجمالى عدد ساعات الإتصال:

الحد الأقصى من عدد ساعات الإتصال (%)	الحد الأدنى من عدد ساعات الإتصال (%)	التخصص	م
12	8	العلوم الإجتماعية والإنسانية	1
4	2	إدارة الأعمال	2
22	18	الرياضيات والعلوم الأساسية	3
6	4	الثقافة الهندسية	4
30	25	العلوم الهندسية الأساسية	5
30	25	التطبيقات الهندسية والتصميم	6
6	4	المشروع والتدريب الميدانى	7
100%		المجموع المتوسط	

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

الباب الرابع
جداول توزيع المقررات الدراسية (مادة 20)
Tables of Courses

مادة (20):

جداول توزيع المقررات

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Preparatory Year
(Zero Level)

Zero Level: Preparatory Year

1ˢᵗ Term -Table Number (1)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
PHM0101	Engineering Mathematics (1) (Calculus I)	3	-	2	5	60	-	90	150	3
PHM0102	Engineering Physics (1) (Properties of matter)	3	2	1	6	30	30	90	150	3
PHM0103	Engineering Chemistry	2	2	1	5	30	30	90	150	3
PHM0104	Engineering Mechanics (1) (Statics)	2	-	2	4	40	-	60	100	3
MDP0101	Engineering Drawing and Projection	1	-	3	4	40	-	60	100	4
HUM0101	Technical English Language	2	-	1	3	40	-	60	100	2
		13	4	10	27				750	

2ⁿᵈ Term - Table Number (2)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
PHM0205	Engineering Mathematics (2) (Calculus II)	3	-	2	5	60	-	90	150	3
PHM0206	Engineering Physics (2) (Electricity and Electromagnetism)	3	2	1	6	30	30	90	150	3
PHM0207	Engineering Mechanics (2) (Dynamics)	2	-	2	4	40	-	60	100	3
MDP0202	Engineering Drawing and Computer Aided Drafting	1	-	3	4	40	-	60	100	4
MDP0203	Production Technology	2	2	-	4	20	20	60	100	3
ECE0201	Computer Technology	1	2	-	3	20	20	60	100	3
HUM0202	History of Engineering and Technology	1	-	-	1	20	-	30	50	2
		13	6	8	27				750	

Notice: Zero level students have to fulfill four weeks summer training (workshops on production technology and Engineering Drawing) after the second term examinations. The total mark of both training is 50 and will be showed with the grades of first level.

يؤدى طلاب المستوي صفر تدريباً خلال العطلة الصيفية فى الورش الميكانيكية والرسم الهندسى لمدة أربعة أسابيع داخل الكلية تحت إشراف أعضاء هيئة التدريس المتخصصين وتضاف درجة التدريب إلى المستوى الأول.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

1. Civil Engineering

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

First Level - Civil Engineering Department

3rd Term- Table Number (3)

Course Code	Course Name	Contact Hours			Total.	Marks Distribution				Exam Time
		Lec.	Lab.	Tut.		Year work	Oral / Practical	Final exam	Total Marks	
PHM1108	Engineering Mathematics (3) (Multivariable Calculus and Differential Equations)	3	-	2	5	60	-	90	150	3
CES1101	Structural Analysis (1)	3	-	2	5	60	-	90	150	3
CES1102	Plane Surveying (1)	2	2	2	6	30	30	90	150	3
CES1103	Engineering Geology	2	-	2	4	40	-	60	100	3
CES1104	Architectural Construction	2	-	-	2	20	-	30	50	2
MPE1101	Fluid Mechanics (1)	2	-	2	4	40	-	60	100	3
MDP1104	Production workshop training and Engineering drawing training	-	-	-	-	-	50	-	50*	
		14	2	10	26				750	

*(20 درجة للرسم أثناء حضور التدريب + 15 درجة لتقرير عن الورش يقدمه الطالب في نهاية التدريب + 15 درجة مناقشة شفوية للطالب في نهاية التدريب يمتحنه فيها أعضاء هيئة التدريس بقسم الهندسة الميكانيكية، هذا التدريب يتم فى العطلة الصيفية بعد المستوى صفر).

4th Term -Table Number (4)

Course Code	Course Name	Contact Hours			Total	Marks Distribution				Exam Time
		Lec.	Lab.	Tut.		Year work	Oral / Practical	Final exam	Total Marks	
CES1205	Structural Analysis (2)	2	-	2	4	40	-	60	100	3
CES1206	Plane Surveying(2)	2	2	1	5	30	30	90	150	3
CES1207	Civil Drawing	2	-	2	4	40	-	60	100	3
CES1208	Properties and Testing of Materials (1)	2	1	1	4	40	-	60	100	3
ECE1202	Electromechanical Equipment and Installments Engineering	2	-	1	3	40	-	60	100	3
MPE1202	Thermodynamics (1)	2	-	1	3	40	-	60	100	3
HUM1203	Presentation skills, communication and technical writing	2	-	2	4	40	-	60	100	3
		14	3	10	27				750	

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Second Level - Civil Engineering Department

5<u>th</u> Term -Table Number (5)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
PHM2109	Engineering Mathematics (4) (Probability and Statistical Analysis)	2	-	2	4	40	-	60	100	3
CES2109	Design of Reinforced Concrete Structures (1)	3	-	2	5	60	-	90	150	3
CES2110	Structural Analysis (3)	2	2	1	5	30	30	90	150	3
CES2111	Properties and Testing of Materials (2)	2	2	2	6	30	30	90	150	3
CES2112	Soil Mechanics	2	1	1	4	20	20	60	100	3
HUM2104	Environmental and Social Impact Assessment	2	-	2	4	40	-	60	100	3
		13	5	10	28				750	

6<u>th</u> Term -Table Number (6)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
CES2213	Structural Analysis (4)	2	-	1	3	40	-	60	100	3
CES2214	Design of Reinforced Concrete Structures (2)	2	1	2	5	30	30	90	150	3
CES2215	Topographical Surveying	2	-	2	4	40	-	60	100	3
CES2216	Irrigation and Drainage Engineering	2	2	1	5	30	30	90	150	3
MDP2205	Engineering Economy	2	-	2	4	40	-	60	100	3
HUM2205	Climate Change and Energy problems	2	-	-	2	20	-	30	50	2
MDP2206	Project Management	2	-	2	4	40	-	60	100	3
		14	3	10	27				750	

Notice: Second level students have to fulfill 4 weeks summer Field training after the second term examinations. The total mark of this training is 50 and will be showed with the grades of third level.

يؤدى طلاب المستوي الثانى تدريباً ميدانياً خلال العطلة الصيفية لمدة أربعة أسابيع تحت إشراف أعضاء هيئة التدريس المتخصصين وتضاف درجة هذا التدريب إلى المستوى الثالث.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Third Level - Civil Engineering Department

7ᵗʰ Term -Table Number (7)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
CES3117	Design of Reinforced Concrete Structures (3)	2	-	2	4	40	-	60	100	3
CES3118	Design of Steel Structures (1)	2	-	2	4	40	-	60	100	3
CES3119	Transportation and Traffic Engineering	2	1	2	5	30	30	90	150	3
CES3120	Hydraulics	2	1	1	4	20	20	60	100	3
CES3121	Elective Course 1	2	-	2	4	40	-	60	100	3
CES3122	Elective Course 2	2	-	2	4	40	-	60	100	3
HUM3106	Negotiation Skills	2	-	-	2	20	-	30	50	2
CES3123	Field Training 1	-	-	-	-	-	50	-	50*	-
		14	2	11	27				750	

(15 درجة لتقييم ومتابعة حضور الطلاب التدريب من قبل أعضاء هيئة التدريس بالكلية حسب التخصص + 15 درجة تقرير يقدمه الطالب في نهاية التدريب + 20 درجة مناقشة شفوية للطالب في نهاية التدريب يقوم بها أعضاء هيئة التدريس بالكلية حسب التخصص، هذا التدريب يتم في العطلة الصيفية بعد المستوى الثاني).

8ᵗʰ Term -Table Number (8)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
CES3224	Design of Reinforced Concrete Structures (4)	2	-	2	4	40	-	60	100	3
CES3225	Design of Steel Structures (2)	2	-	2	4	40	-	60	100	3
CES3226	Foundation Engineering (1)	2	-	1	3	40	-	60	100	3
CES3227	Design of Irrigation Works (1)	2	2	1	5	30	30	90	150	3
HUM3207	Entrepreneurship and Marketing	2	-	2	4	40	-	60	100	3
CES3228	Elective Course 3	2	-	2	4	40	-	60	100	3
CES3229	Computer Applications in Civil Engineering	1	2	1	4	20	20	60	100	3
		13	4	11	28				750	

Notice: Third level students have to fulfill 4 weeks summer Field training after the second term examinations. The total mark of this training is 50 and will be showed with the grades of fourth level.

يؤدى طلاب المستوي الثالث تدريباً ميدانياً خلال العطلة الصيفية لمدة اربعة أسابيع تحت إشراف أعضاء هيئة التدريس المتخصصين وتضاف درجة هذا التدريب إلى المستوى الرابع.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Fourth Level - Civil Engineering Department

9th Term -Table Number (9)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
CES4130	Sanitary Engineering	2	2	1	5	30	30	90	150	3
CES4131	Design of Irrigation Works (2)	2	2	1	5	30	30	90	150	3
CES4132	Highway Engineering	2	-	1	3	40	-	60	100	3
CES4133	Foundation Engineering (2)	2	-	1	3	40	-	60	100	3
CES4134	Elective Course 4	2	-	2	4	40	-	60	100	3
CES4135	Elective Course 5	2	-	2	4	40	-	60	100	3
CES4800	B.Sc. Project	-	4	-	4	-	-	-	-	-
CES4137	Field Training 2	-	-	-	-	-	50	-	50*	-
		12	8	8	28				750	

*(15 درجة لتقييم ومتابعة حضور الطلاب التدريب من قبل اعضاء هيئة التدريس بالكلية حسب التخصص + 15 درجة تقرير يقدمه الطالب في نهاية التدريب + 20 درجة مناقشة شفوية للطالب في نهاية التدريب يقوم بها اعضاء هيئة التدريس بالكلية حسب التخصص، هذا التدريب يتم فى العطلة الصيفية بعد المستوى الثالث).

10th Term -Table Number (10)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
CES4238	Computerized Structural Analysis	2	2	1	5	30	30	90	150	3
CES4239	Metallic Bridges	2	-	2	4	40	-	60	100	3
CES4240	Design of Reinforced Concrete Structures (5)	2	-	2	4	40	-	60	100	3
CES4241	Specification and Quantities	2	-	2	4	40	-	60	100	3
HUM4208	Human Rights & Labor Law	2	-	2	4	40	-	60	100	3
CES4800	B.Sc. Project	-	4	-	4	100	-	100	200	-
		10	6	9	25				750	

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Table Number 11: Elective Courses - Civil Eng. Dept.

Code CES3121	Menu For Elective Course (1)	Code CES3122	Menu For Elective Course (2)
A	Geodesy and Satellite Surveying	A	Systems of Traffic Management
B	Ethics and Legislation	B	Remote Sensing and Applications
C	Maintenance and Rehabilitation of Concrete Structures	C	Water Resources Management
Code CES3228	Menu For Elective Course (3)	Code CES4134	Menu For Elective Course (4)
A	Environmental Management for Construction	A	Water and Sanitary Networks
B	Special Concrete	B	Soil improvement
C	Inspection and Quality Control	C	Earthquake Engineering
Code CES4135	Menu For Elective Course (5)		
A	Special Topics in Reinforced Concrete Design		
B	Railways Engineering		
C	Plastic Design of Steel Structures		

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

2. Mechanical Engineering

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

First Level - Mechanical Engineering Department

3rd Term -Table Number (12)

Course Code	Course Name	Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	Exam Time
PHM1108	Engineering Mathematics (3) (Multivariable Calculus and Differential Equations)	3	-	2	6	60	-	90	150	3
MDP1107	Machine Drawing	2	4	-	5	30	30	90	150	4
MPE1101	Fluid Mechanics (1)	2	1	1	4	20	20	60	100	3
MDP1108	Production Engineering	2	-	2	4	40	-	60	100	3
MDP1109	Mechanics of Rigid Bodies	2	-	2	4	40	-	60	100	3
ECE1103	Electrical & Electronic Engineering	2	-	2	4	40	-	60	100	3
MDP1104	Production workshop training and Engineering drawing training	-	-	-	-	-	50	-	50*	-
		13	5	9	27				750	

*(20 درجة للرسم اثناء حضور التدريب + 15 درجة لتقرير عن الورش يقدمه الطالب في نهاية التدريب + 15 درجة مناقشة شفوية للطالب في نهاية التدريب يمتحنه فيها أعضاء هيئة التدريس بقسم الهندسة الميكانيكية، هذا التدريب يتم فى العطلة الصيفية بعد المستوى صفر)

4th Term -Table Number (13)

Course Code	Course Name	Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	Exam Time
PHM1209	Engineering Mathematics (4) (Probability and Statistical Analysis)	2	-	2	4	40	-	60	100	3
MDP1210	Computer aided Machine Drawing	1	4	-	5	30	30	90	150	4
PHM1210	Engineering Physics (3) (Modern Physics)	2	1	1	4	20	20	60	100	3
MPE1202	Thermodynamics (1)	3	1	1	5	30	30	90	150	3
MDP1211	Stress Analysis	3	1	1	5	30	30	60	150	3
HUM1203	Presentation skills, communication and technical writing	2	-	2	4	40	-	60	100	3
		13	7	7	27				750	

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Second Level - Mechanical Engineering Department

5th Term - Table Number (14)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
PHM2111	Engineering Mathematics (5) (Numerical analysis)	3	-	2	5	60	-	90	150	3
MDP2112	Kinematics of Machines	2	-	2	4	40	-	60	100	3
MDP2113	Machine Element Design	3	-	2	5	60	-	90	150	3
MDP2114	Metallurgy	2	1	2	5	30	30	90	150	3
HUM2104	Environmental and Social Impact Assessment	2	-	2	4	40	-	60	100	3
MDP2115	Engineering Economy	2	-	2	4	40	-	60	100	3
		14	1	12	27				750	

6th Term - Table Number (15)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
MPE2203	Heat & Mass Transfer (1)	3	1	1	5	30	30	90	150	3
MDP2216	Measurements and instrumentations	3	1	1	5	30	30	90	150	3
MDP2217	Project Management	2	-	2	4	40	-	60	100	2
MDP2218	Dynamics of Machines	2	-	2	4	40	-	60	100	3
HUM2205	Climate Change and Energy problems	2	-	1	3	40	-	60	100	2
MDP2219	Computer Applications in Mechanical Engineering	2	2	1	5	30	30	90	150	3
		14	4	8	26				750	

Notice: Second level students have to fulfill 4 weeks summer field training after the second term examinations. The total mark of this training is 50 and will be showed with the grades of third level.

يؤدى طلاب المستوي الثانى تدريباً ميدانياً خلال العطلة الصيفية لمدة اربعة أسابيع تحت إشراف أعضاء هيئة التدريس المتخصصين وتضاف درجة هذا التدريب إلى المستوى الثالث.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

2.1. Mechanical Power Engineering

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Third Level - Mechanical Power Engineering Department

7ᵗʰ Term -Table Number (16)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
MDP3120	Machine Design (1)	2	-	2	4	40	-	60	100	3
MPE3104	Thermodynamics (2)	2	1	2	5	30	30	90	150	3
MPE3105	Fluid Mechanics (2)	2	2	1	5	30	30	90	150	3
MPE3106	Computer Applications in Mechanical Power Engineering	2	1	-	3	20	20	60	100	3
HUM3106	Negotiation Skills	2	-	-	2	20	-	30	50	2
MDP3121	System Dynamics	2	-	2	4	40	-	60	100	3
MPE3107	Elective Course (1)	2	-	2	4	40	-	60	100	3
		14	4	9	27				750	

8ᵗʰ Term -Table Number (17)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
MDP3222	Theory of Vibration	2	-	2	4	40	-	60	100	3
MPE3208	Theory of Combustion	2	2	2	6	30	30	90	150	3
MPE3209	Hydraulic Machines	2	2	2	6	30	30	90	150	3
MPE3210	Thermal Power Stations	2	-	2	4	20	20	60	100	3
HUM3207	Entrepreneurship and Marketing	2	-	2	4	40	-	60	100	3
MPE3211	Heat & Mass Transfer (2)	2	1	1	4	20	20	60	100	3
MPE3212	Field Training1	-	-	-	-	-	50	-	50*	-
		12	5	11	28				750	

Notice: Third level students have to fulfill 4 weeks summer Field training after the second term examinations. The total mark of this training is 50 and will be showed with the grades of fourth level.

يؤدى طلاب المستوي الثالث تدريباً ميدانياً خلال العطلة الصيفية لمدة اربعة أسابيع تحت إشراف أعضاء هيئة التدريس المتخصصين وتضاف درجة هذا التدريب إلى المستوى الرابع.

*(15 درجة لتقييم ومتابعة حضور الطلاب التدريب من قبل أعضاء هيئة التدريس بالكلية حسب التخصص + 15 درجة تقرير يقدمه الطالب في نهاية التدريب + 20 درجة مناقشة شفوية للطالب في نهاية التدريب يقوم بها أعضاء هيئة التدريس بالكلية حسب التخصص، هذا التدريب يتم فى العطلة الصيفية بعد المستوى الثانى).

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Fourth Level - Mechanical Power Engineering Department

9th Term -Table Number (18)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
MPE4113	Pipelines and Networks	2	-	1	3	40	-	60	100	3
MPE4114	Automatic Control	2	-	1	3	40	-	60	100	3
MPE4115	Refrigeration & Air Conditioning (1)	2	2	1	5	30	30	90	150	3
MPE4116	Hydraulic Power Systems	2	2	1	5	30	30	90	150	3
MPE4117	Elective Course (2)	2	-	2	4	40	-	60	100	3
MPE4118	Elective Course (3)	2	-	2	4	40	-	60	100	3
MPE4800	B.Sc. Project	-	4	-	4	-	-	-	-	-
MPE4120	Field Training2	-	-	-	-	-	50	-	50*	-
		12	8	8	28				750	

*(15 درجة لتقييم ومتابعة حضور الطلاب التدريب من قبل اعضاء هيئة التدريس بالكلية حسب التخصص + 15 درجة تقرير يقدمه الطالب في نهاية التدريب + 20 درجة مناقشة شفوية للطالب في نهاية التدريب يقوم بها اعضاء هيئة التدريس بالكلية حسب التخصص، هذا التدريب يتم فى العطلة الصيفية بعد المستوى الثالث).

10th Term -Table Number (19)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
MPE4221	Refrigeration & Air Conditioning (2)	3	2	1	6	30	30	90	150	3
MPE4222	Internal Combustion Engines	3	1	-	4	20	20	60	100	3
HUM4208	Human Rights & Labor Law	2	-	2	4	40	-	60	100	3
MPE4223	Elective Course (4)	2	-	2	4	40	-	60	100	3
MPE4224	Elective Course (5)	2	-	2	4	40	-	60	100	3
MPE4800	B.Sc. Project	-	4	-	4	100	-	100	200	-
		12	7	7	26				750	

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Table Number 20: Elective Courses - Mechanical Power Engineering Department

Code MPE3107	Menu For Elective Course (1)	Code MPE4117	Menu For Elective Course (2)
A	Heat Exchangers	A	Selected Topics in Mechanical Power Engineering
B	Pollution	B	Design Code & Application
C	Wind Energy	C	Mechanical Failure Analysis
Code MPE4118	**Menu For Elective Course (3)**	**Code MPE4223**	**Menu For Elective Course (4)**
A	Maintenance of Refrigeration and Air Conditioning Equipment	A	Maintenance and Economics of Power Plants
B	Solar Energy and Application	B	Gas Dynamics
C	Application of Fuel and Oils	C	Energy Efficiency and Environmental
Code MPE4224	**Menu For Elective Course (5)**		
A	Water Distillation		
B	Pumps and Compressors		
C	New and Renewable Energy		

2.2. Mechanical Design and Production Engineering

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

28

Third Level - Mechanical Design and Production Engineering Department

7<u>th</u> Term -Table Number (21)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
MDP3120	Machine Design (1)	2	1	1	4	20	20	60	100	3
MDP3121	System Dynamics	2	-	2	4	40	-	60	100	3
MDP3123	Materials Handling	2	1	1	4	20	20	60	100	3
MDP3124	Theory & Technology of Metal Forming	2	1	2	5	30	30	90	150	3
MDP3125	Elective Course (1)	2	-	2	4	40	-	60	100	3
MDP3126	Elective Course (2)	2	-	2	4	40	-	60	100	3
HUM3106	Negotiation Skills	2	-	-	2	20	-	30	50	2
MDP3127	Field Training1	-	-	-	-	-	50	-	50*	-
		14	3	10	27				750	

(15 درجة لتقييم ومتابعة حضور الطلاب التدريب من قبل أعضاء هيئة التدريس بالكلية حسب التخصص + 15 درجة تقرير يقدمه الطالب في نهاية التدريب + 20 درجة مناقشة شفوية للطالب في نهاية التدريب يقوم بها أعضاء هيئة التدريس بالكلية حسب التخصص، هذا التدريب يتم فى العطلة الصيفية بعد المستوى الثانى).

8<u>th</u> Term -Table Number (22)

Course Code	Course Name	Contact Hours				Marks Distribution				Exam Time
		Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	
MPD3222	Theory of Vibration	2	-	2	4	40	-	60	100	3
MDP3228	Machine Design (2)	3	1	1	5	30	30	90	150	3
MDP3229	Theory & Technology of Metal Cutting	2	1	2	5	30	30	90	150	3
MDP3230	Modeling & Simulation of Manufacturing Systems	2	2	2	6	30	30	90	150	3
MDP3231	Elective Course (3)	2	-	2	4	40	-	60	100	3
HUM3207	Entrepreneurship and Marketing	2	-	2	4	40	-	60	100	3
		13	4	11	28				750	

Notice: Third level students have to fulfill 4 weeks summer field training after the second term examinations. The total mark of this training is 50 and will be showed with the grades of fouth level.

يؤدى طلاب المستوي الثالث تدريباً ميدانياً خلال العطلة الصيفية لمدة اربعة أسابيع تحت إشراف أعضاء هيئة التدريس المتخصصين وتضاف درجة هذا التدريب إلى المستوى الرابع.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Fourth Level - Mechanical Design and Production Engineering Department

9ᵗʰ Term -Table Number (23)

Course Code	Course Name	Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	Exam Time
		Contact Hours				Marks Distribution				
MDP4132	Failure Analysis	3	1	1	5	30	30	90	150	3
MDP4133	Maintenance Planning and Control	2	2	1	5	30	30	90	150	3
MDP4134	Computer Aided Design	2	2	1	5	30	30	90	150	3
MDP4135	Elective Course (4)	2	-	1	3	40	-	60	100	3
MDP4136	Elective Course (5)	2	-	1	3	40	-	60	100	3
MPE4114	Automatic Control	2	-	1	3	40	-	60	100	3
MDP4800	B.Sc. Project	-	4	-	4	-	-	-	-	-
		13	9	6	28				750	

10ᵗʰ Term -Table Number (24)

Course Code	Course Name	Lec.	Lab.	Tut.	Total	Year work	Oral / Practical	Final exam	Total Marks	Exam Time
		Contact Hours				Marks Distribution				
MDP4238	Computer aided Manufacturing	2	2	2	6	20	20	60	100	3
MDP4239	Composite Materials	2	1	2	5	20	20	60	100	3
MDP4240	Facility Planning & Analysis	2	-	1	3	40	-	60	100	3
HUM4208	Human Rights & Labor Law	2	-	2	4	40	-	60	100	3
MDP4241	Computer Applications in Design and Production Engineering	2	1	1	4	20	20	60	100	3
MDP4800	B.Sc. Project	-	4	-	4	100	-	100	200	-
MDP4243	Field Training2	-	-	-	-	-	50	-	50*	-
		10	8	8	26				750	

* (15 درجة لتقييم ومتابعة حضور الطلاب التدريب من قبل اعضاء هيئة التدريس بالكلية حسب التخصص + 15 درجة تقرير يقدمه الطالب في نهاية التدريب + 20 درجة مناقشة شفوية للطالب في نهاية التدريب يقوم بها اعضاء هيئة التدريس بالكلية حسب التخصص، هذا التدريب يتم فى العطلة الصيفية بعد المستوى الثالث).

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Table Number 25: Elective Courses - Mechanical Design and Production Engineering Department

Code MDP3125	Menu For Elective Course (1)	Code MDP3126	Menu For Elective Course (2)
A	Tribology	A	Quality Engineering
B	Nondestructive testing	B	Reliability Engineering
C	Metal Testing	C	Quality Management & Assurance
Code MDP3231	Menu For Elective Course (3)	Code MDP4135	Menu For Elective Course (4)
A	Production & Operations Management	A	CIM & Robotics Engineering
B	Project Planning , Scheduling & Control	B	Work Design & Ergonomics
C	Operations Research	C	Mechatronics Engineering
Code MDP4136	Menu For Elective Course (5)		
A	Polymer Processing Technology		
B	Material Selection		
C	Nanotechnology Analysis		

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

الباب الخامس
محتوى المقررات الدراسية (مادة 21)
Courses Content

مادة (21):

محتوي المقررات الدراسية

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Humanities (HUM) Courses

HUM0101 Technical English Language

Properties of technical English language – Revision of language grammar and syntax – Properties of syntax and effective phrase – Some common mistake in writing technical English – Building mistakes paragraphs (main idea – types) – Reading and analysis some technical reports in different engineering branches

HUM0202 History of Engineering and Technology

Definitions : (art – science – technology – engineering) civilization developments and relation to physical and human science – History of technology and different branches – Historical relation between science and technology – Relation between engineering and social and economic environment development – Examples about development of engineering activities

HUM1203 Presentation skills, communication and technical writing

Recognizing different types of speeches and presentations, Overcoming nervousness and developing confidence while addressing an audience, Researching and generating information for informative presentations, Chucking presentation content, Designing effective visual aids, Using explicit and effective transitions throughout a presentation, Creating benefit statements for persuasive presentations, Using persuasive devices such as pathos and logos in speeches. Planning and delivering informative, persuasive, entertaining and inspiring presentations, Writing principles (Report organization – Forms - Graphics) - Report contents – Report steps (Report outlines & revising) - Standard - Letters - Page design - Short reports- Technical specifications- Catalogues reading. Presentation techniques

HUM2104 Environmental and Social Impact Assessment

Objectives of Environmental and Social Impact Assessment (ESIA), Nature and classification of environmental effects, Methods supporting ESIA practice, Screening procedures, Scoping and environmental baseline assessment, Predicting environmental impacts, Determining impact significance, Impact prediction, evaluation and mitigation, Managing project impacts, Post decision monitoring, Participation, presentation and review, Public participation in ESIA Cumulative environmental effects, Strategic environmental assessment, The effectiveness of ESIA, Case studies of ESIA in practice, Comparative practice. Improving the effectiveness of project assessment, Strategic environmental assessment.

HUM2205 Climate Change and Energy problems

Climate change and energy overview, Energy trends and policy history, Climate change science and policy, Global response to climate change, Kyoto Protocol, Natural gas: Bridge to sustainability or "Edge of the world", Renewable energy: Options, costs, and benefits, Nuclear power, Fossil fuel's future, Adaptation, and resilience, Clean energy finance and innovation, Private sector role in delivering solutions, Global sustainability: Toward a smart energy future.

HUM3106 Negotiation Skills

The course is aimed at developing analytical and communication skills that are necessary for successful business negotiations. The topics include Introduction. What is negotiation? Preparing the negotiations, in the room: the actual negotiation stage, Negotiation strategies, Countering manipulation and psychological press, Post-negotiation stage, and Special negotiation cases

HUM3207 Entrepreneurship and Marketing

Entrepreneurship definition, Theory of Entrepreneurship, Ethics of Entrepreneurship, The Field of Sales, Strategic Sales Force Management, The Personal Selling Process and Sales Force Organization, Profiling and Recruiting Salespeople, Selecting and Hiring Applicants, Developing the Sales Program, Sales Force Motivation, Sales Force Compensation, Expenses and Transportation; Leadership of a Sales Force, Forecasting Sales and Developing Budgets; Sales Territories, Analysis of Sales Volume, Marketing Cost & Profitability Analysis, Performance Evaluation; Ethical and Legal Responsibilities tender writing.

HUM4208 Human Rights & Labor Law

Human Rights: Importance of human rights, Growing Historical Human Rights, The historical origins of the philosophical human rights, Legal schools to consolidate human rights, International conventions on human rights, Agencies, international organizations and global and regional based on the protection of human rights, The position of the Egyptian constitution of human rights, The legal protection of human rights national and international level, Human rights in Islamic law, Sources of international human rights, Show of some human rights.

Labor Law: Definitions and general provisions, Employment of workers children and women, Employment contracts, records and wages, Working hours and leaves, Workers' safety, protection, health and social care, Disciplinary rules, Termination and severance pay, Compensation for occupational injuries, Collective labor disputes, Labor inspection, Penalties

Physics and Mathematics (PHM) Courses

PHM0101 Engineering Mathematics (1) (Calculus I)

Differential Calculus:

Types of Functions: Algebraic and Transcendental, Limits, Continuity, Differentiation, Fundamental Rules for Differentiation, Higher order derivatives: n^{th} derivative, Applications of Differentiation: L`Hopital's Rule, Taylor series, Curvature, Extreme points of a function, Asymptotes. Functions of Several Variables, Partial Derivative

Algebra:

Binomial theorem, Partial fractions, Complex Variables, Theory of equations, Sequences, Series, Matrices, System of linear equations.

PHM0102 Engineering Physics (1) (Properties of matter)

Units and dimensions, simple harmonic motion, Circular motion, Moment of inertia, Elastic properties of materials, fluid statics, fluid dynamics and viscosity, applications. Heat transfer, Kinetic theory of gases, the three laws of thermodynamics, applications

PHM0103 Engineering Chemistry

Physical Chemistry: Gases, Liquid State, Thermo Chemistry, Thermodynamics, Solutions, Ionic Equilibrium. Applied Chemistry: Electrochemistry, Corrosion Of Metals, Water Treatment, Chemistry Of Cements, Chemistry Of Polymers, Fuels Combustion, Pollution And Its Control

PHM0104 Engineering Mechanics (1) Statics

Statics of particles, forces in three-dimensions, vector algebra; equivalent systems of forces, moments of forces, equilibrium of rigid bodies in two dimensions, reactions at supports and connections for a 2D structure, 2D trusses, equilibrium of rigid bodies in three dimensions, centers of gravity, first moments of areas and lines, second moment, or moment of inertia of an area, polar moment of inertia, principal axes and principal moments of inertia.

PHM0205 Engineering Mathematics (2) (Calculus II)

Integral Calculus:

The Fundamental Theorem of Calculus, Indefinite integrals, Fundamental Integration Rules, Methods of Integration, Definite Integrals, Properties of Definite integrals, Improper Integrals. Applications of Definite Integrations: Area between Curves, Arc Length, Volume of Solid of Revolution, Centre of mass. Fourier Series

Analytical Geometry:

Analytic Geometry in the plane: The circle, conic sections, General equation of second degree. Analytic Geometry in the space: The plane, the straight line, the sphere, cone, cylindrical, and quadratic surfaces.

PHM0206 Engineering Physics (2) (Electricity and Magnetism)

Electricity: Electric field and Coulomb's law, Electric potential, Capacitors and dielectrics, applications. Electromagnetism: Effects of the Magnetic field, Magnetic force, Biot-Savart law, Ampere's law, Electromagnetic induction, applications.

PHM0207 Engineering Mechanics (2) (Dynamics)

Rectilinear Motion of Particles, Position, Velocity And Acceleration, Uniform Rectilinear Motion, Uniformly Accelerated Rectilinear Motion, Curvilinear Motion, Derivatives of Vector Functions, Rectangular Components of Velocity And Acceleration, Relative Motion, Tangential And Normal Components of Acceleration, Motion of A Particle In A Circular Path, Velocity And Acceleration of A Particle In Polar Coordinates. Kinetics of Particles: Newton's Second Law, Linear Momentum of A Particle, Equations of Motion With Applications In Cartesian Coordinates, Tangential And Normal Directions, Polar Coordinates, Free Vibrations of Particles, Simple Harmonic Motion; Energy & Momentum Methods, Work of A Force, Kinetic Energy of A Particle, Principle Of Work And Energy, Applications, Power And Efficiency, Potential Energy, Conservation of Energy, Principle of Impulse And Momentum, Impulsive Motion, Impact, Direct Central Impact And Coefficient of Restitution, Oblique Central Impact.

PHM1108 Engineering Mathematics (3) (Multivariable Calculus and Differential Equations)

Multivariable Calculus:

Functions of Several Variables, Limits, Continuity, Partial Derivatives, Multiple Integrals: Double Integrals, Triple Integrals. Surface And Line Integrals, Applications Of Multiple Integrals, Integration Theorems

Differential Equations:

Classifications of Differential Equations, Ordinary Differential Equations, First Order Differential Equations, Initial Value Problems, and Applications of First Order Differential Equations, Second Order Differential Equations, Applications of Second Order Differential Equations, Linear Differential Equations, and Systems of Ordinary Differential Equations, Laplace Transformations, Partial Differential Equations, Classifications, Analytical Methods of Solution, Method of Separation of Variables, Basic P.D.E of Engineering Application .

PHM1209 and PHM 2109 Engineering Mathematics (4) (Probability and Statistical Analysis)

Statistics:

Statistical methods, Frequency distribution, Measures of Central Tendency, Measures of Variability, Correlation analysis, Regression analysis, Statistical Hypotheses, Analysis of Variance, Numeric Representation of Correlation, Spearman Rank Order Correlation, Proper Statistical Test, Statistical Tests Involving Correlation.

Theory of Probability:

Random Sampling, Probability laws, Conditional Probability, Bye's Law, Discrete probability distributions, Continuous probability distributions, Discrete and Continuous Joint Distributions, Functions of Random Variables, Expected Value, Multivariate Densities, Variance, Standard deviation, Variance and Regression, Moment Generating Function

PHM1210 Engineering Physics (3) (Modern Physics)

Modern physics: Plank's theory of quantization of energy of radiation, Photo- electric effect, x-rays and Compton effect, Wave properties of matter and wave function, Principles of quantum mechanics and Schrödinger equation, Atomic structure and study the tunneling phenomenon, Quantum theory of the free electrons in metals, Statistical distribution laws, Lattice vibrations and thermal properties of solids, Super conductivity. Vibrations and waves: Simple, Damped and forced vibrations, Wave motion and acoustics, Interference, Diffraction and polarization of light. Geometrical optics: Refraction of light, Prisms, Reflection of light, Lenses, Lens aberration, applications

PHM2111 Engineering Mathematics (5) (Numerical Analysis)

Numerical Solution of Equations and Systems of Equations, Interpolation, Curve Fitting, Numerical Differentiation, Numerical Integration, Numerical Solution of Ordinary Differential Equations, Approximation Theory and Numerical Solution of Patial Differential Equations

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Electrical and Communication Engineering (ECE) courses

ECE0201 Computer Technology
Computer architecture, Computer systems, Operating systems, File systems, Computer networks, Internet network, Logical design of programs, Problem solving methods, Types of programming languages, Application on a structured or visual computer programming language for solving engineering problems, Database systems and information technology and decision support systems, Computer graphics and computer systems needed for graphics and image display, Multimedia systems.

ECE1202 Electromechanical Equipment and Installments Engineering
Electrical Measurements, Measurement Errors, Accuracy, Static Calibration, Resolution And Precision, Dynamic Response. Units, Systems, Dimensions and Standards, Moving-Coil Instruments, Moving Iron Instruments, Electro-Dynamic Instruments, Induction-Type Instruments, Current And Voltage Measurements, Measurement Of Power, Measurement of Energy and Charge, Measurement of Frequency and Power Factor, Cathode Ray-Oscilloscopes Application. DC Bridges, AC Bridges, Resistance and Capacitance Measurement, Allocation of Cable Faults, Strain Gauges, Temperature Transducers, Displacement, Velocity and Acceleration Transducers, Force And Pressure Transducers, Light Transducers, Data Converters, Voltage-To-Frequency Converters.

ECE1103 Electrical & Electronic Engineering
Analysis of DC and AC Circuits, Branch Currents and Node Voltages, Transient Analysis, Single Phase Transformers, Induction Motors, Predicting Motor Performance, Logic Gates, Circuit Design with Logic Gates, Introduction to Electronics engineering, Analyzing and characterizing the basic power electronic circuits - Diodes and rectifier circuits - Transistors: DC bias, power transistors. Thyristors: operation, rectifier circuits. Design of digital and analogue firing circuits needed to operate the power electronic circuits, Digital electronic

Civil Engineering (CES) Courses

CES1101 Structural Analysis (1)

Types of structures and supports and loads-Idealization of structures and loads, Reactions, Elastic stability, Analysis of statically determinate beams, frames and trusses, Analysis of determinate arches, Internal forces

CES1102 Plane Surveying (1)

Classification of surveying sciences – Units of measurements – Drawing scales – Types of surveying maps – Distance measurements – Compass measurements – Angels measurements– Coordinate systems – Setting out of points.

CES1103 Engineering Geology

Loads and stresses – Deformation and strains– Relation between stress and strain – Testing machines – Tests – Standard specifications – Aggregate – Cement – Reinforcing steel – Mixing water and admixtures – Timber– Bricks – Lime – Gypsum – Plastic– Insulation materials.

CES1104 Architectural Construction

Architectural and civil drafter or engineer - Environmental designer - Residential or commercial arpenter - Construction worker-Systems configuration manager-Electrical design engineer-Electrician - VAC/HVACR technician-Building services technician - Painter-Sheet metal technician

CES1205 Structural Analysis (2)

Influence lines for statically determinate structures– properties of plane section– stresses and deformations for axially loaded members– normal stresses due to axial forces and biaxial moments.

CES1206 Plane Surveying (2)

Areas and land division– Calculation of quantities for land leveling– Methods of determination of difference in elevation– Gird leveling– Contour line– Theodolite and vernier– missing observations– Theodolite traverses

CES1207 Civil Drawing

Notation, dimensions and scale–Drawing of simple steel structures and connections of steel bridges– Drawing of concrete structures (cross sections for columns, beams, slabs, frames, and foundations– reinforcement details)– Retaining structures– Earth works (cross sections of canals, drains, roads, railways and non-rigid dams)– Irrigation structures (bridges– weirs– regulators– syphons– aqueducts– culverts)– Applications using Computer Aided Design (CAD) software.

CES 1208 Properties and Testing of materials (1)

Engineering classification of minerals and rocks– Faults, folds and joints– earthquakes– Geological maps– engineering properties of rocks– weathering and related problems– Geophysical applications.

CES 2109 Design of Reinforced Concrete Structures (1)

Structural system– Statical system of floor elements– Absolute bending moment and shearing force diagrams– Load distribution– Introduction to methods of design– First principle design of reinforced concrete section subjected to flexure using limit state design method– Bond and anchorage between steel and concrete– Development length of reinforcement– Design of statically determinate beams– Details of reinforcement of beams– Shear Stresses of Beams.

CES2110 Structural Analysis (3)

Shear stresses in solid and hollow sections– Shear flow and shear center– Torsion of solid and hollow members with thin or thick walls– Combined and principal stresses– Properties of plastic section– Displacement calculations.

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اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

</div>

CES 2111 Properties and Testing of Materials (2)

Concrete technology – Properties and testing of fresh and solid concrete – Different types of concrete – Design of concrete mix – Nondestructive tests for concrete – Quality control– Properties of metallic materials under the effect of impact, fatigue and creep – Theories of failure of materials – Flexure beyond elastic limit.

CES 2112 Soil Mechanics

Properties of soil– Classification of soil– Permeability– Stresses inside soil– Shear strength– Soil consolidation– Settlement- Lateral earth pressure– Bearing capacity under shallow foundation– Stability of earth slopes – Retaining walls.

CES 2213 Structural Analysis (4)

Displacement calculation using virtual work– Analysis of statically indeterminate structures using consistent deformation for beams and three moment equations and its applications– Analysis of simple and continuous beams under moving loads– Buckling of column– Plastic analysis of beams and frames.

CES 2214 Design of Reinforced Concrete Structures (2)

Using limit state design method for the design of continuous beams, solid slabs and short and long columns– Design of sections subjected to eccentric forces– Serviceability limit states and cracks control– Design of section subjected to biaxial bending– Design of reinforced concrete walls– Introduction to the design of concrete members using working stress design method.

CES 2215 Topographical Surveying

Tachometric surveying– Electronic measuring devices– Drawing methods of contour lines– Drawing using computers and digital maps– Horizontal curves– Vertical curves– Theory of errors– Arial surveying– Remote sensing– Image interpretation and its engineering applications– Geographic Information System– Application of surveying in engineering projects

CES 2216 Irrigation and Drainage Engineering

Introduction to irrigation and drainage– Sources of irrigation water– Soil water relationship– Assessment of plant water requirements using different methods– Water duties– Irrigation losses and irrigation efficiencies– Different irrigation methods– Different drainage methods– Design of surface irrigation system in Egypt– Synoptic diagram– Design of longitudinal and cross sections of water courses– Lining and maintenance of canals– Drainage stations.

CES 3117 Design of Reinforced Concrete Structures (3)

Design of sections subjected to torsion– Design of plate slabs– design of ribbed and hollow blocks slabs- design of paneled beams.

CES 3118 Design of Steel Structures (1)

Steel properties –Loads and structural system – Design of tension and compression members, wind bracing, trusses and weld connections– Bolted ordinary connections.

CES 3119 Transportation and Traffic Engineering

Urban planning– Objectives and goals and transportation planning stages– Traffic studies (volume, speed, density, and travel time delay)- Traffic flume characteristics- Interception control.

CES 3120 Hydraulics

Open channel flow (regime of flow and channel properties, uniform flow, gradually varied flow, computation of gradually varied flow curves, rapidly varied flow and hydraulic jump, unsteady flow and wave propagation)- Hydropower stations- Pumps and turbines.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

CES3123 Field Training 1

During summer and after second semester final exams, students should spend up to six weeks in field training in reputable Engineering Institution or Engineering Firm. They should prepare a technical report implying a full description of the processes they joined for training. Students should demonstrate the professional and practical skills they acquired during discussion of report with their assigned tutors.

CES 3224 Design of Reinforced Concrete Structures (4)

Long span structures– Structural system– Frames– Design of frame base, Arches, Saw-Tooth slab, and Structural joints.

CES 3225 Design of Steel Structures (2)

Connection with high strength bolts- Bases- Rolled and plate girders subjected to dynamic loads- Beam column- Rigid frames- Lateral torsional buckling- Introduction to composite structures

CES 3126 Foundation Engineering (1)

Shallow foundation: Spread footings- Combined footings- Footing subjected to moments- Strip footings- Mat foundation- deep foundation: Classification- Bearing capacity of deep foundation- Design of piles- Settlement of pile group- Piles subjected to lateral loads- Design of pile caps.

CES 3227 Design of Irrigation Works (1)

Introduction to irrigation structures- Design of retaining walls- Small-span bridges- Intersection of roads and channels- Culverts- Aqueducts- Siphons- Tail escapes- Spillways- Introduction to hydraulic tunnels.

CES 3229 Computer Applications in Civil Engineering

Solutions to a variety of civil engineering problems using application programs such as Mathcad, Excel, and Matlab Emphasis is made on problem solving approach and structured programming with software tools useful to civil engineering computation and design

CES 4130 Sanitary Engineering

Statistical methods in sanitary engineering- Water supply works- Preliminary studies for wastewater systems and structures- Water resources and collection- Treatment and recycling of wastewater- Water treatment and storage- Sources of wastewater- Water Distribution and networks- Solid waste collection, sorting, treatment and recycling.

CES 4131 Design of Irrigation Works (2)

Seepage theory and fundamentals of flow through porous media- Seepage beneath hydraulic structures- Erosion and sedimentation downstream hydraulic structures- Weirs- Barrages and regulators- Gate operation- Reservoir classification and storage operation- Types of locks- Systems of loading and unloading of locks- Types of dams (rigid and non-rigid)- Stability of dams.

CES 4132 Highway Engineering

Classification of roads- Planning and route selection- Geometric design criteria- Planning and design of intersection- Design and characteristics of asphalt mixes- Design of pavement and concrete roads- Surface drainage of roads.

CES 4133 Foundation Engineering (2)

Sheet piling - Introduction to tunnels- Caissons- Dewatering - Earthquake effect on soil - Foundation- Dams

CES4137 Field Training 2

During summer and after second semester final exams, students should spend up to six weeks in field training in reputable Engineering Institution or Engineering Firm. They should prepare a technical report implying a full description of the processes they joined for training. Students should demonstrate the professional and practical skills they acquired during discussion of report with their assigned tutors.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

كلية الهندسة   **جامعة السويس**

CES 4238 Computerized Structural Analysis

Stiffness method of the analysis for beam – Frames and trusses in plane and space and its computer applications– Applications using available software packages

CES 4239 Metallic Bridges

Floors of Railway Bridges - Bracing of Longitudinal Beams And Bracing of Braking Forces - Design of Composite and Plate Girder Bridges

CES4240 Design of Reinforced Concrete Structures (5)

Pre-Stressed concrete- Design of marine structures- Design of shallow and deep tanks- Design of elevated, ground, and underground tanks- Design of shell structures (domes, cones,….) - Design of folded slabs.

CES 4241 Specifications & Quantity

Introduction to the writing of specifications documents presented with working drawings as part of the contract documents- General and special conditions of the job- Defining the scope of work and detailed descriptions of items and materials- Quantity surveying (rules and methods), check listing the finished work and detecting faulty items

CES4800 B.Sc. Project

The student deals with the analysis and design of a complete engineering system using the fundamentals, Principles and skills he gained during his study. The project's report presented by the student should include the details of the analysis and design satisfying the concerned code requirements, The computer applications as well as the experimental work when necessary, In addition to the technical engineering drawing of his design. Throughout the project text and at the exam, the student should prove his complete understanding of the elements of the project and his capability to apply them in his coming engineering career.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Elective Courses - Civil Engineering (CES)

CES 3121 (A) Elective Course 1 (Geodesy and Satellite Surveying)

3-D coordinate computations and transformations- Coordinates determination using different GPS techniques- GPS operation planning- Remote sensing basics and principles- Elements of photography process- Types of microwave and radars- Terrestrial monitoring.

CES 3121 (B) Elective Course 1 (Ethics and Legislation)

Engineering profession:

Ethical issues in engineering practice, Conflicts between business demands and professional ideals, Social and ethical Responsibilities of Technologists, Codes of professional ethics, Nature of values, Formal sources, Informal sources, Application of Law, Theory of Obligation; definition, forms, Sources of Obligations. Labor Law Safety and Vocational Laws The contract Parties, Formation, Validity, Effect, Interpretation, Responsibilities, Dissolution, and compensation of Damage

CES 3121 (C) Elective Course 1 (Maintenance and Rehabilitation of Concrete Structures)

Maintenance and Repair strategies - Maintenance, repair and rehabilitation, Facets of Maintenance, importance of Maintenance various aspects of Inspection, Assessment procedure for evaluating a damaged structure, causes of deterioration - design and construction errors - Materials and Techniques for Repair -Ferrocement and polymers coating for rebars loadings from concrete– Strengthening using FRP Strengthening and stabilization techniques for repair.

CES 3122 (A) Elective Course 2 (Systems of Traffic Management)

Definition of management and traffic operation- Traffic planning- Traffic operating signals- Light signals- Parking control- Traffic tidal effect- Improvement of cargo transportation services.

CES 3122 (B) Elective Course 2 (Remote Sensing and Applications)

Basics and principle of remote sensing and applications– Advantages of remote sensing and application– Control and check of location– Systems of receive industrial satellite– Software packages and equipment for analysis of satellite images.

CES 3122 (C) Elective Course 2 (Water Resources Management)

Water resources economics; Water resources conservation techniques; Optimization in water resources engineering; Irrigation management; Reservoir management; Sustainable water resources development; Environmental impact assessment of water resources projects.

CES 3228 (A) Elective Course 3 (Environmental Management for Construction)

Legislation Overview - Environmental Management Systems - Air Quality - Land Management, Site Assessment, Use of Soil and Stone, Contaminated Land-Water for Construction, Wastewater Collection, Stormwater-Waste Policy, Waste Management, Waste Collection, Treatment and Disposal - Energy Management - Pollution Prevention, Hazardous Materials, Fueling, Noise and Nuisance - Sustainable Construction, Green Building-Resources for Construction Site Management

CES 3228 (B) Elective Course 3 (Special Concrete)

Importance and need – high performance concrete and property based classifications. Special concretes: Mass concrete, self-compacting, fiber reinforced concrete, high strength concretes, high-volume fly ash concretes, geo-polymer concrete, pervious concrete, light weight concrete, polymer or polymer modified concretes, ultrahigh performance concretes, etc. Mixture proportioning and parameters in the development of special concretes; Special concreting operations: Guniting and shotcreting, pre-placed aggregate, anti-washout concretes, concrete pumping, tremie placement for underwater applications and others.

<div align="center">اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)</div>

CES 3228 (C) Elective Course 3 (Inspection and Quality Control)

Technical investigation– Procedures of quality control– Statistical control for concrete– Non destructive tests for concrete.

CES 4134 (A) Elective Course 4 (Water and Sanitary Networks)

Construction of water supply networks– Types of pipes and network accessories for supply and sewage networks– Construction of wastewater network – Statistical methods in sanitary engineering

CES 4134 (B) Elective Course 4 (Soil improvement)

Engineering need for soil improvements: Geotechnical problems with soft and loose soils- soil improvement techniques: mechanical stabilization, Deep and shallow compaction techniques- soil parameters after densification and pre-loading - Design and construction of soil reinforcement- reinforcing materials - grouting properties and techniques- criterion for choosing suitable techniques

CES 4134 (C) Elective Course 4 (Earthquake Engineering)

Properties of earthquake – Importance of earthquake studies in Egypt– Response of structures with first degree of freedom to different dynamic loads– Design code– Computer application for calculation of earthquake forces – Introduction to seismic isolation – Analysis of temporal domain

CES 4135 (A) Elective Course 5 (Special Topics in Reinforced Concrete Design)

One or more topic, from the following, should be chosen: High – rise building – Precast building – Yield line theory – Beam column joint – Design of silos- R.C. bridges- Water structures.

CES 4135 (B) Elective Course 5 (Railways Engineering)

Dynamics of train movement- Railway scheduling- Geometric design of Railway- Structural design of railway- Signals- Turnouts and switches- Stations and yards- Railway cost.

CES 4135 (C) Elective Course 5 (Plastic Design of Steel Structures)

Introduction to plastic analysis– Properties of plastic sections– Analysis of structures under ultimate load– Plastic design of beams and frames.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Mechanical Power Engineering (MPE) Courses

MPE1101 Fluid Mechanics (1)
Physical Properties of Fluids, Pressure Distribution in Fluids, Governing equations in integral form Hydrostatic Forces on Surfaces Immersed in Fluids, Buoyancy Forces and Stability of Floating Bodies, Bernoulli Equation and Applications, Fluid flow measurement (velocity measurements, volume flow rate measurements), Boundary layer for laminar and turbulent flows, Laminar and turbulent flows through pipes and calculation of friction and secondary losses, Pipe flow, Pipe network analysis and design

MPE1202 Thermodynamics (1)
Fundamental concepts and definitions - Work and Heat - Zeroth law of thermodynamics, First law of thermodynamics - Properties of Pure Substances - Application of the First law of thermodynamics - Second law of thermodynamics - Reversible and irreversible processes - Entropy - Application of the Second law of thermodynamics - Irreversibility and Availability Processes - Thermodynamic Relations - Gas mixture - The Rankine Cycle, The Rankine Cycle Components, Effect of Pressure and Temperature on Rankine Cycle, The Reheat Cycle, The Regenerative Cycle.

MPE2203 Heat & Mass Transfer (1)
Steady-state and unsteady state conduction in one and multidimensional - Steady-state and unsteady-state mass transfer – Interphase transport and transfer coefficients - Convective heat and mass transfer - Internal and external forced convection - Heat transfer equipment - Boiling and condensation - Radiation heat transfer - mixture compositions and species fluxes - Diffusion fluxes and Fick's law - mass transfer coefficients - Simultaneous heat and mass transfer.

MPE3104 Thermodynamics (2)
Vapor power cycles - Ideal and real gases - Gas power cycles - Internal Combustion Engines Air-Standard Analysis - Constant Volume or Otto Cycle - Constant Pressure or Diesel Cycle - Dual Combustion Cycle - Atkinson Cycle – Ericsson Cycle - Gas Turbine Cycle-Brayton Cycle - Combined Gas–Vapor Power Cycles - Refrigeration cycles - Irreversibility and Availability Processes - Gases and vapor mixtures – Psychometrics - Chemical thermodynamics (Types of Fuels, Calorific Values of Fuels - Combustion of Fuels - Combustion Equation for Hydrocarbon fuels - Theoretical Air and Excess Air - Adiabatic Flame Temperature - The Third Law of Thermodynamics and Absolute Entropy - Analysis of Exhaust and Flue Gas.

MPE3105 Fluid Mechanics (2)
Governing equations - Kinematics of fluid - fluid dynamics for incompressible flow - Ideal fluid flow (two dimensional Potential flow-three dimensional Potential flow) - viscous flows of incompressible fluid (exact solutions- approximate solutions- Boundary Layer) - Lift forces - Drag forces - Compressible flow (One-dimensional flow- Multidimensional flow -Normal shock waves, Oblique shock waves, isentropic flow in a nozzle or duct) - Course project computer oriented.

MPE3106 Computer Applications in Mechanical Power Engineering
Solutions to a variety of mechanical power engineering problems using application software programs, Emphasis is made on problem solving approach and structured programming with software tools useful to mechanical power engineering computation and design

MPE3208 Theory of Combustion
The fuel-air standard cycle - Deviations between the actual cycle and fuel air standard cycle - Combustion chambers - Fuel types properties and its impact on engine performance - Chemical reactions - Theoretical and actual combustion processes - enthalpy of reaction - Chemical equilibrium - Phase equilibrium - fuel injection – engine types and their operation - combustion in spark-ignition

engine (normal combustion detonation and pre-ignition) - combustion in compression ignition engine – Introduction to industrial furnaces - combustion and heat transfer in industrial furnaces – Saving energy in industrial - Environmental combustion consideration.

MPE3209 Hydraulic Machines

Centrifugal pumps: Theory, Construction, Performance, Operation, Cavitation, Axial and radial thrust, Maintenance trouble shooting and selection. Positive displacement pumps: Reciprocating pumps, Diaphragm pumps. Rotary pumps: gear pump, Vane type rotary pump, Rotary piston pumps, Radial cylinder pumps, Parallel cylinder pumps. Cavitation phenomenon in water turbines: Theory, Effects and avoidance. Water hammer phenomenon in pipelines: Theory, Effects and methods of protection. Hydraulic turbines: Theory, Turbine Classifications, Construction, Power calculations, Performance, Power house and environmental Impact, Non- conventional turbomachinery applications.

MPE3210 Thermal Power Stations

Classification of power station - Analysis of Steam power - Thermal analysis and power plant performance - Plant Operation and Control - fossil fuel steam generators - turbines - the condensate feed water system – the circulation water system - Desalination Plants - Gas turbine power plant: simple plant components, Thermal Analysis and performance of each component (Intercooling - Reheat - Regenerative - Water injection) - Steam and Gas turbine power plant (Combined Cycle) - Combined Cycles with multi-pressure steam - Hydraulic power plant - Nuclear power plant - Diesel power plants - Storage of energy in power station – Effect energy storage on environmental engineering

MPE3211 Heat & Mass Transfer (2)

Unified point of view to energy and mass transport, Steady and unsteady mass and heat diffusion in solids and stagnant liquids, Laminar, forced and natural convection, Equations of change for non-isothermal systems and multi-component systems, Analytical and approximate solutions to equations of change with applications to problems in research and design, Heat and Mass Transport in Turbulent Flows, Diffusion under various driving forces and with chemical reaction, Energy and mass transport in boundary layers with relevant analogies, Simultaneous heat and mass transfer, Multi-component mass transport for dilute solutions

MPE3213 Field Training 1

During summer and after second semester final exams, students should spend up to six weeks in field training in reputable Engineering Institution or Engineering Firm. They should prepare a technical report implying a full description of the processes they joined for training. Students should demonstrate the professional and practical skills they acquired during discussion of report with their assigned tutors.

MPE4113 Pipelines and Networks

Empirical Formulas for Friction in Pipes - Branching Pipes - Pipe Networks – Reservoirs - Simple Valves - Complex Valves - Network Analysis - Economic Considerations - Build Up - Performance - Maintenance - Design codes for pressure vessels tanks, filters, pipe, pump…etc.

MPE4114 Automatic Control

Introduction to feedback control –sensitivity Analysis- Robustness-Steady state error analysis- control actions & controller tuning – stability in the frequency domain: Bode, Nyquist – root locus technique – compensation: design of control systems – applications using MATLAB.

MPE4115 Refrigeration & Air Conditioning (1)

Introduction - Survey of Refrigeration Systems and Applications - Vapor Compression System - Actual Refrigeration System - Multi-stage or Compound Compression - Multi- Evaporator Systems - Cascade Systems - Refrigerants - vapor absorption system - ejector-compression system - gas cycle refrigeration - Introduction of Air Conditioning system - Survey of Air Conditioning and Applications - properties of

moist air - psychrometric chart - Human Comfort - Comfort Chart - Psychrometric Process - Requirements for a comfortable and healthy indoor environment - noise and noise control

MPE4116 Hydraulic Power Systems

Hydraulic systems: Constant displacement pumps, Outer and inner vane pumps, Outer and inner gear pumps, Variable displacement pumps, Piston pumps, Eccentric plate pumps, Pumps control systems: Systems efficiency, Hydraulic circuits types, Power losses at opening and closing also at partial load, Total efficiency for system and the control of speed at loading, The control of constant displacement pumps, Hydraulic motor: High speed motors, High torque and low speed, High and average displacement with high torque and low speed. Hydraulic transmission: Hydraulic system efficiency, Different application and control.

MPE4120 Field Training (2)

During summer and after second semester final exams, students should spend up to six weeks in field training in reputable Engineering Institution or Engineering Firm. They should prepare a technical report implying a full description of the processes they joined for training. Students should demonstrate the professional and practical skills they acquired during discussion of report with their assigned tutors.

MPE4221 Refrigeration & Air Conditioning (2)

Complete Vapor Compression System - refrigerant compressor - condenser – expansion devices - evaporators - Heat transfer in building structures - Cooling load calculations - application in Cold Store Design (food refrigeration) - design condition – load calculations and applied Psychrometric - design of Air Conditioning apparatus – air distribution and transmission duct systems - refrigeration and air conditioning control -operation and maintenance refrigeration and air conditioning system - Course project computer oriented.

MPE4222 Internal Combustion Engines

Introduction to IC engines - Classification of internal combustion engines - IC engines operating characteristics - Ideal thermal cycles - Actual IC engines cycles - IC engines emissions and Treatment - Fuel metering systems in IC engines - Ignition systems in IC Engines - Combustion in SI engines Combustion in CI engines Superchargers and turbochargers - IC engines control unites And sensors - IC engines testing and performance - Friction and lubrication - Heat losses in internal combustion engines - Engine design.

MPE4800 B.Sc. Project

The student deals with the analysis and design of a complete engineering system using the fundamentals, Principles and skills he gained during his study. The project's report presented by the student should include the details of the analysis and design satisfying the concerned code requirements, the computer applications as well as the experimental work when necessary, In addition to the technical engineering drawing of his design. Throughout the project text and at the exam, the student should prove his complete understanding of the elements of the project and his capability to apply them in his coming engineering career.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Elective Courses - Mechanical Power Engineering (MPE)

MPE3107-A Heat Exchangers
Introduction and Basic Concepts – Heat Exchangers Classification – Thermal and Hydraulic Design of Heat Exchangers – Shell and Tubes Exchangers – Boilers – Condensers and Cooling Towers – Radiators – Heat Exchanger Test and Effectiveness – Fouling in Heat Exchangers – Materials Used in Heat Exchangers Fabrication – Uses of Heat Exchangers – Heat Exchanger Selection.

MPE3107-B Pollution
Pollution Resources – Air Pollution Spreading and Control Strategy – Environment Conditions and the Effects on Pollution – Calculating the Average Annual Concentration of Pollutants in the Exhaust – Chimneys Heights Calculation

MPE3107-C Wind Energy
Introduction - principle of wind power - Site characteristics - Definitions and Technical Terminology - Wind Turbines Types - Wind Properties - Wind Speed Measurements and Statistics - Wind Turbines Components and Operation Characteristics - Wind Turbine Control – Calculating. The Power Generated from Wind Turbines - Wind Farms - Environmental Effects of Wind Turbines - Economics of Power Generation by Wind - Wind energy in Egypt.

MPE4117-A Selected Topics in Mechanical Power Engineering
A key topic is selected to introduce newer approaches in manufacturing Engineering Applications - Supportive Computer Software - Selected case studies for implementations

MPE4117-B Design Code & Application
International codes for the design of various parts, components, and machines to ensure safety in production and performance - Design codes for pressure vessels and gear transmission system- power transmission devices, tanks, filters, pipelines…etc.

MPE4117-C Mechanical Failure Analysis
Functional and structural failures – Tribological surface failures, abrasive, adhesive, fatigue wear, fretting and corrosive wear, mechanisms and analysis - Design against wear failures. Modes of bulk failures, excessive deformation, buckling, yielding, plastic instability, creep and creep rupture - Fatigue and incremental collapse, fracture mechanics, crack propagation, fail-safe design methods of analysis - Identifications, detection and control of failures, Experimental methods of failure analysis. Case studies, applications to some mechanical components

MP4118-A Maintenance of Refrigeration and Air Conditioning Equipment
Chilled Water Production Units (Compressors – Evaporators – Condensers – Expansion Devices – Pumps – Control Devices) - Air Handling Units (Supply and Exhaust Air Grilles, Filters, Cooling Coils – Heating Coils – Humidifiers – Fans) - Ducts, Cooling Towers, Insulators, Control Devices, Diagnosing Refrigeration and Air Conditioning Equipment Problems - Methods of Refrigeration and Air Conditioning Equipment Maintenance, Human need and standardization - Ergonomic design - Design for maintenance - Design for reliability - Design for assembly - Design against wear and corrosion - Economy and cost accounting - Energy saving - Applications.

MPE4118-B Solar Energy and Application

Solar Energy and Radiation - Geometry and Intensity of Solar Radiation, Calculating The Solar Radiation on Horizontal and Inclined Surfaces, Solar Radiation Collectors, Solar Energy Applications - Coolants, Absorption Cooling System, Thermoelectric Cooling, Direct and Indirect Solar Heating - Sunlight energy - photovoltaic devices, energy conversion, solar radiation measurement. Maximizing cell efficiency, Solar cell construction, Types and adaptations of photovoltaic, photovoltaic circuit properties. Applications and systems - Social and environmental aspects. A key topic is selected to introduce newer approaches in manufacturing Engineering applications, Supportive Computer Software, Selected case studies for implementations

MPE4118-C Application of Fuel and Oils

Different Types of Fuel and Its Natural Properties - Combustion Laws Basics, Thermochemistry Analysis - Calorific Values of Fuel - Flame Temperature - Dissociation- Combustion Processes - Burners - Disturbed Combustion Systems - fuel mixture requirements - carburetor design and emission control - alternate fuels (Alcohols, Vegetable oils and bio-diesel, Bio-gas, Natural Gas, Liquefied Petroleum Gas ,Hydrogen, Properties, Suitability, Engine Modifications, Performance, Combustion and Emission Characteristics of SI and CI Engines using these alternate fuels), Properties and classification on engine lubricating oil - Testing of the lubricating oil – Lubrication Methods (Hydrodynamic – Hydrostatic) - Mechanical Parts Lubrication - oils and Lubricants Types (Solid Lubricants – Gaseous Lubricants – Oil Type Test) Lubrication Systems (Oil and Lubricant Lubrication Systems – Test System – alerting and Protection Methods – Changing Oil Periods and Tests).

MPE4223-A Maintenance and Economics of Power Plants

Different Types of Power Plants - Economics of Power Plants - Load Curves – Plant Location, Plant Selection - Cogeneration Cycle - Diagnosing Power Plants Problems, Power Plants Maintenance Methods.

MPE4223-B Gas Dynamics

Introductory concepts to compressible flow, Steady one dimensional gas dynamics, Compressible flow in ducts, Waves in supersonic flow (Introduction - Oblique shock waves - Supersonic flow over a wedge - Mach-lines - Piston analogy - Weak oblique shocks - Subsonic compression by turning - Supersonic expansion by turning - The "Prandtl-Meyer" function - Simple non simple regions - Reflection and intersection of oblique shocks - Intersection of shocks - Intersection of shocks of the same family - Detached shocks - Mach reflection - Shock/Expansion theory - Thin airfoil theory - The hodograph plane - Cone in supersonic flow).

MPE4223-C Energy Efficiency and Environmental

Introduction to energy resources - Measurement of Energy - conversion energy - transmission energy - distribution energy - consumption energy - Forms of energy - Energy and Society - Energy Use of Some Home Appliances - Energy Supply and Demand - Egypt Energy Consumption - Growth in the Energy Demand – Energy Efficiency - Energy and the Environment - Health and Environmental - Effects of the Primary Pollutants - Secondary Pollutants - Acid Rain - Ozone and Environment – the Environmental Protection - Economics and politics of renewable energy systems – energy storage and distribution (biological storage, chemical storage, heat storage, electrical storage, mechanical storage, compressed air storage, distribution) - environmental aspect of power generation - importance of energy saving and state of energy consumption in Egypt - relation between energy saving and environment - cost of electrical energy and fuel price in Egypt.

MPE4224-A Water Distillation

Introduction - Heat principle and two-phase flow - Desalination Plants - Principles of Sea water desalination - Operational techniques of thermal desalination - Desalination process categories, Multi-Effect Distillation (MED) - Multi-Stage Flash Distillation (MSF), Reverse Osmosis (RO), Forward Reverse Osmosis (FRO) - flash evaporation desalination system by solar energy, desalination by humidification and removing humidity, chemical treatment of saline water - Plant economy and selection

MPE4224-B Pumps and Compressors

Centrifugal Pumps - Pump Casing - Leakage - Impeller Friction and Mechanical Losses, Axial Propulsion - Pumps Performance - Pump Control and Valves, Compressors Classification, Reciprocating Compressors, Rotating Compressors, and Compressors Performance.

MPE4224-C New and Renewable Energy

Introduction, principle of renewable energy, solar radiation, solar water heating, Design and accessories of water heating systems, photovoltaic generation, design and application of photovoltaic system, electric power system used solar energy, water desalination by used solar energy, refrigeration and air condition by using solar energy, solar chimney, wind energy, wind turbine operation and types. Wind turbines design and configuration. Wind system calculation, Ocean energy concept and systems, recent ocean thermal energy conversion (OTEC) developments - energy and power from wave, geothermal energy, and biofuels

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Mechanical Design and Production Engineering (MDP) Courses

MDP0101 Engineering Drawing and Projection
Engineering drawing techniques and skills, Conventional lettering, dimensioning, Geometric constructions, and Theories of view derivation, Orthographic projection of engineering bodies, Projection of points, Lines, Surfaces and bodies, Derivation of views from isometric drawings and vice versa, Derivation of views and sections from given views, Intersection of bodies and surfaces, Development of surfaces, Steel construction, Symbols of electrical circuits, Fasteners, Assembly drawings for some mechanical components

MDP0202 Engineering Drawing and Computer Aided Drafting
An introduction to drafting including shape description, geometric construction, orthographic and isometric drawing, sectioning, dimensioning, applied descriptive geometry, Basic dimensioning, tolerancing and pictorial drawings will be covered, An introduction to the use of computers for design of industrial prints of intermediate complexity

MDP0203 Production Technology
Introduction to machining processes, Cutting tool materials and characteristics, Practical machining operations: turning, shaping, drilling, milling, grinding, basic elements of machine tools and specifications, Machining time, chip formation, Cutting process Economics, Dividing head. Introduction and definitions of metrology, gauges, Errors in measurement, Linear measuring instruments, Angle measuring instruments. Tests of straightness and flatness, Surface roughness

MDP2205 and MDP2115 Engineering Economy
Basic Concepts, Interest Rates, Payment Factors, Nominal and Effective Interest rates, Multiple Factors, Capitalized Cost, Equivalent Uniform, Rate of return computation for Single Project, Benefit, Cost Ratio Evaluation, Tax Economic Analysis, Straight-Line Depreciation, Declining Balance Depreciation, Sum-of-Years Digit Depreciation Sensitivity Analysis.

MDP2206 and MDP2217 Project Management
Introduction to Project Management, Beginning a Project, Project Planning, Project Budgeting, Project Scheduling, Project Execution, Monitoring and Controlling the Project, Summary of Project Management Knowledge, Cost estimating and budgeting. Gantt chart, Management network techniques PERT and CPM, resource allocation and leveling

MDP1104 Production workshop training and Engineering drawing training
During summer and after second semester final exams, students should attend four weeks internal training under supervision of engineering drawing staff. Student should perform daily engineering drawing exercises for mechanical, civil, electrical, ..etc. engineering .
Students should attend four weeks workshop training under supervision of production engineering staff as well as workshop technical staff. Student will learn how to prepare shop drawing for mechanical elements. They are requested to perform a real exercise demonstrate the professional and practical skills they acquired.

MDP1107 Machine Drawing
Drawings and design of some selected mechanical parts: - Theories of failure. Fasteners (bolts, Keys, pins), Power transmission (shafts, axles, spindles) .Cotter joint, rigid, flexible, frictional and universal couplings, Power screws, Riveted joints, and Welded joints.

MDP1108 Production Engineering

Part (1): Metal casting technology: Principles of solidification, Patterns, Sand casting, Modern casting techniques, Melting procedures and equipment, Design considerations, Structure, Properties and defects of casting, Computer applications in metal casting, Quality control in casting. Part (2): Welding processes, Soldering and brazing, Welding symbols, testing of welded joints, welding defects, and welding inspection.

MDP1109 Mechanics of Rigid Bodies

Two-dimensional force systems (Rectangular components, moment, couple, resultants), Equilibrium, Structures (System isolation and the free body diagram, equilibrium conditions), Kinematics of Rigid Bodies (Introduction, rotation, absolute motion, relative velocity, instantaneous centre of zero velocity, relative acceleration, motion relative to rotating axes.), Kinetics of Rigid Bodies (Introduction, general equations of motion, translation, fixed axis rotation, general plane motion, Work-energy relations, virtual work, Impulse momentum equations.

MDP1210 Computer aided Machine Drawing

Parts and elements of machines, drawing parts of machines using computer- CAD menu - Types of points, lines, curves, ellipses…etc. - Dimensions – Mirrors - Hatching. Assembly drawing

MDP1211 Stress Analysis

Engineering material – Loading types – Concepts of Stress and Strain - Types of Normal Stresses – Torsion Stress and Strain – Beams– Thermal stresses in bars- Stress in Composite bar- Combined Stresses- Destructive Materials tests – Non-Destructive Material tests.

MDP2112 Kinematics of Machines

Concepts of Kinematics and Dynamics, Mechanisms and Machines, Planar and Spatial Mechanisms, Kinematic Pairs, Kinematic Chains, Kinematic Diagrams, Kinematic Inversion, Four bar chain and Slider Crank Mechanisms and their Inversions, Degrees of Freedom, Mobility and range of movement

MDP2113 Machine Element Design

Design procedure, Design for fits and tolerances. Riveted, Bolted and welded Joints design, Shrink fit joint design - Power screw design

MDP2114 Metallurgy

Solidification of metals and mechanism of plastic deformation – annealing process and hot working – phase diagram and metallographic examination of phases – heat treatment of steel and alloy steel – cast iron – non ferrous metals and their alloys – metal corrosion and its prevention – failure analysis – plastics – ceramics and composites .

MDP2216 Measurements and instrumentations

Basic Concepts - Experimental Results Analyzing - Temperatures Measuring – Pressures Measuring - Flow Rate Measuring - Viscosity Measuring - Thermal Conductivity Measuring - Heat and Mass Transfer Coefficient Measuring - Air Pollution Measurements - Calibration of Measurement Devices - Linear measurements – Limit gauges - Comparators - Straightness and flatness - Roughness - Measurement of threads and gears - Metrological functions of the laser linear measurements - Angle measurement – Roughness measurement - Three-dimensional measurements - Measuring methods by the help of computer.

MDP2218 Dynamics of Machines

Analytical and graphical solutions of kinematic and dynamic motion problems involving mechanical elements: linkages, gears, cams, mechanical trains, etc. Modeling and characteristic phenomena of one degree-of-freedom mechanical vibrations encountered in machines and structures.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

MDP2219 Computer Applications in Mechanical Engineering

Numerical modeling for engineers, Computer Organization, Writing a computer programs, Program documentation, some matrix concepts, Programming in MATLAB

MDP3120 Machine Design (1)

Design of: springs, power screws, thin pipes and pressure vessels, Seals and design of hydraulic and pneumatic cylinders - Application of computer aided design - Introduction to power transmission elements.

MDP3121 System Dynamics

Dynamic behavior of mechanical systems (modeling, analysis techniques, and applications, vibrations of single and multi-degree of-freedom systems),
Feedback control systems, vibration and control systems simulation and experimental studies.

MDP3222 Theory of Vibration

Free Vibrations of Single Degree of Freedom (SDOF) Systems - Forced ibrations of SDOF Systems - Harmonic Excitation: The Frequency Response Function (FRF) - Periodic excitation: Spectral Analysis - Impulse Excitation: The Impulse Response Function (IRF) - Types of Damping. Experimental Determination of SDOF parameters - Whirling of Shafts - Vibration Isolation: Transmissibility - Multi-Degree of Freedom (MDOF) systems - The Eigen-Value problem - Natural Frequencies and Mode Shapes - Orthogonally of Modal Vectors - Expansion Theorem - Free Response of MDOF systems - Forced Response of MDOF systems - FRFs for MDOF systems.

MDP3123 Materials Handling

Material handling terminology, Principles, Design procedure, Analysis of material handling requirements, Relationship with layout, Unit load, Material handling equipment and selection, Storage and warehousing, Material handling (conveyor, AGV) in production and flow systems, Material handling (order picking, AS/R systems, carousels) in warehousing and storage systems, Storage models and storage space utilization.

MDP3124 Theory & Technology of Metal Forming

Mechanical behavior of materials, Effect of temperature on stress strain curve, Strain rate, Deformation and recrystallization, Cold and hot working, Strain hardening, Yield criteria, Forging, Rolling, Extrusion, Deep drawing, Calculation of load during friction and frictionless, Mechanics of forming processes, formability limits, Deformation zone and defects - Die design principles.

MDP3127 Field Training (1)

During summer and after second semester final exams, students should spend up to six weeks in field training in reputable Engineering Institution or Engineering Firm. They should prepare a technical report implying a full description of the processes they joined for training. Students should demonstrate the professional and practical skills they acquired during discussion of report with their assigned tutors.

MDP3228 Machine Design (2)

Design theory and methodology, Preliminary design of power transmission elements: shafts, gears, bearings, couplings, clutches, brakes, belts, ropes, and chains - Theory and detailed design of shafts and rolling bearings assembly under different loading conditions - Appropriate selection and mounting of rolling bearing elements - Construction details of some machine elements assemblies such as transmission shafts - Computer aided selection of machine elements - Detailed design of power transmission elements: spur gears, helical gears, bevel and worm gears, belts, ropes, chains, couplings, clutches, and brakes - Theory and Design of Hydrodynamic and hydrostatic bearings and computer utility in design evaluation

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

MDP3229 Theory & Technology of Metal Cutting

Basic concepts and definitions, Tool geometry, Tool materials, Chip formation, Mechanics of metal cutting, Measurement of the cutting forces, Cutting theories, Empirical cutting force relationships in conventional cutting, Heat in metal cutting, Tool failure, Tool wear and its measurement, Tool life, Taylor's relationship, Factors affecting tool life, Chatter in machining, Cutting fluids, Surface roughness, Machining economy, Machinability, Process sheets.

MDP3230 Modeling & Simulation of Manufacturing Systems

An Overview of Computer Simulation Modeling - Fixed-Time Increment Simulation Models and Applications - Fixed Increment Simulation Models - Event-Scheduling Simulation Models - Application of Event Scheduling Models - Sampling on Computer- Random Deviate Generation - Three-Phase Computer Simulation Models – Process Interaction Simulation Models - Network Simulation Models - Sample Size in Simulation Experiment - Analysis of Simulation Experiments - Special Purpose Computer Simulation languages.

MDP4132 Failure Analysis

Functional and structural failures – Tribological surface failures, abrasive, adhesive, fatigue wear, fretting and corrosive wear, mechanisms and analysis - Design against wear failures. Modes of bulk failures, excessive deformation, buckling, yielding, plastic instability, creep and creep rupture - Fatigue and incremental collapse – fracture mechanics - crack propagation - Fail-safe design - methods of analysis - Identifications, detection and control of failures - Experimental methods of failure analysis - Case studies - applications to some mechanical components.

MDP4133 Maintenance Planning and Control

Introduction - Maintenance policies - Probabilistic fault distribution - Methods of calculating reliability - Methods of calculating redundancy - Improving reliability and redundancy - Inspection techniques of equipment and components - Techniques of fabrication and repair of spare parts. Maintenance scheduling

MDP4134 Computer aided Design

Introduction to the use of modern computational tools used for design and analysis. Primary focus is on product design with solid modeling and finiteelement analysis. Software used is representative of that found in industry. Topics such as 2-D and 3-D drawing, tolerance specification, and FEA validation are also covered.

MDP4243 Field Training (2)

During summer and after second semester final exams, students should spend up to six weeks in field training in reputable Engineering Institution or Engineering Firm. They should prepare a technical report implying a full description of the processes they joined for training. Students should demonstrate the professional and practical skills they acquired during discussion of report with their assigned tutors.

MDP4238 Computer aided Manufacturing

Components of CNC machines (mechanical parts, sensors, transducers, limit switch, speed drives and control, hot electrical panel), Describing the operation panel of CNC machine tool (emergency stop, mode select, cycle start, feed hold, single block, optional block skip, dry run, reference return, feed rate override, rapid traverse, machine lock, optional stop …. Etc), Data, Coding system, Data entry, Axes, Programming of CNC machines, Manual programming for complex work pieces, Manual programming using fixed cycles, Looping, Subroutines etc. part design specification, NC programming, process planning, and Computer aided process planning (CAPP), CAM systems, and CAD/CAM data exchange.

MDP4239 Composite Materials

Classification, Reinforcements - Matrix resins Raw material for part fabrication – Volume and weight fraction - Mechanics of continuous - discontinuous and particulate FRP - Lamina and laminate

properties - Failure mechanism - recommended testing specifications - Manufacturing process selection criteria - mold and tool making - Basic steps in manufacturing - Manufacturing of thermoset process: Hand layup , filament wind , and RTM processes - Manufacturing of thermoplastic process: pultrusion , injection, and compression mold.

MDP4240 Facility Planning & Analysis

Strategic facility planning - Location selection - Flow, space and activity relationships - personnel requirements - material handling - layout - computer aided layout - warehouses - different layout types - The Exchange Algorithm for Layout Improvement - Mathematical Programming for Facility Location based on department coordinates - From-to-Chart - Flow Matrix - Cost of Layouts - qualitative tools - Construction versus Improvement Algorithms - Different Heuristic Methods (CORELAP, COFAD, ALDEP, etc.) - Case studies.

MDP4241 Computer Applications in Design and Production Engineerin

Solutions to a variety of design and production engineering problems using application software programs. Emphasis is made on problem solving approach and structured programming with software tools useful to Design and Production engineering computation and design.

MDP4800 B.Sc. Project

The student deals with the analysis and design of a complete engineering system using the fundamentals, Principles and skills he gained during his study. The project's report presented by the student should include the details of the analysis and design satisfying the concerned code requirements, The computer applications as well as the experimental work when necessary, In addition to the technical engineering drawing of his design. Throughout the project text and at the exam, The student should prove his complete understanding of the elements of the project and his capability to apply them in his coming engineering career

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Elective Courses - Mechanical Design and Production

MDP3125-A Tribology
Friction theories, Wear phenomenon, Wear mechanisms, Lubrication Theories, Hydrodynamic journal bearings, Hydrodynamic (tilt-pad) thrust bearings, Lubricants, Seals, Hydrostatic bearings and applications.

MDP3125-B Nondestructive testing
Magnetic particle testing, Eddy current testing, Ultrasonic testing, Acoustic emission testing, Radiography, Image formation

MDP3125-C Metal Testing
Destructive testing: Tensile test, Hardness test, Fatigue test, Creep test. Non-Destructive testing: Eddy currents-radiography- ultrasonic- photo elasticity – magnetic methods- pneumatic methods

MDP3126-A Quality Engineering
Sources of variations - Economics of variation - The Taguchi 3-phase methodology: Systems Design, Parameter Design and Tolerance Design - Introduction to Orthogonal Arrays, levels2, levels3 and multi levels arrays, Analysis of Means (ANOM), and Analysis of Variance (ANOVA). Design Centering and Variance Control Problems, Controllable, Uncontrollable and Adjustment variables - Efficient Test Strategies, Full Factorial Designs and Fractional Factorial Designs, Case Studies.

MDP3126-B Reliability Engineering
Basic probability rules, Random variables and distribution functions, Functions of random variables - Applications to quality control and the reliability assessment of Mechanical / electrical components, as well as simple structures and redundant systems. Elements of statistics, Bayesian methods in engineering - Methods for reliability and risk assessment of complex systems (event-tree and fault-tree analysis, common-cause failures, human reliability models) Uncertainty propagation in complex systems (Monte Carlo methods, Latin Hypercube Sampling) - Introduction to Markov models.

MDP3126-C Quality Management & Assurance
Quality Management and Assurance - Nature and concept of Quality Systems – Quality Assurance International Standards (ISO 9000 series) - Analysis of ISO 9000 Requirements. Benchmarking Concepts, Quality Function Development (QFD), Quality by Design, Taguchi's Quality Engineering - ISO 1400, Management Tools, Case studies.

MDP3231-A Production & Operations Management
Basic concepts of production management - Aggregate Planning - Short, medium and long term planning - Forecasting - Master Production Scheduling - Capacity Planning, Inventory Control management - demand and supply - Material requirement planning, resource allocation and scheduling, Theory of Constraints - Case Studies.

MDP3231-B Project Planning, Scheduling & Control
Project Management Phases - Planning Phase of Project - Structure of Network, Deterministic Duration Time Estimates - Probabilistic Duration Time Estimates, Scheduling Phase of Project, Basic Scheduling Computation - Slack Time Computation, Critical Path Identification - Project Cost Control - Resource Constraints, and Time-Cost Trade-off - Case study.

MPD3231-C Operations Research
Introduction to operations research - Linear Programming models - primal and dual problems: graphical solutions, simplex method - post optimality analysis – special algorithms - transportation ,transshipment, and assignment problems - Maximal flow, shortest route, minimum spanning tree, and traveling

salesman problems - The Branch & Bound Algorithm - Integer Programming. Constraint Relaxations Techniques - Enumeration Techniques

MDP4135-A CIM & Robotics Engineering
Robotics History, Fundamentals, and Applications - Robot Components: Mechanical Structures, End-Effector and Tooling, Transmission Systems, Drives and Actuators, Sensors, Brain and Controller; Robot Motion Planning, Programming and Control Methods - Robot Specification Characteristics and robot selection - Planar Robots Mathematical Modeling (Geometric, Kinematics, and Dynamics) using vector mechanics - 3D Robots Mathematical Modeling (Geometric, Kinematics, and Dynamics) using Homogeneous Transformation Matrix - Computer oriented Robot Simulation and Animation using graphics software - Course Project

MDP4135-B Work Design & Ergonomics
Productivity and human performance - Recording and Analysis of methods of work - Operation analysis and improvement - Principles of motion economy and Manual Work Design -Ergonomics Considerations of Work Place - tools and equipment design – Work Environment Design - Performance rating and work allowance systems – Predetermined time systems - The impact of ambient working conditions on working productivity - Cognitive ergonomics - Low cost vs. High Cost Ergonomics - Course Project.

MDP4135-C Mechatronics Engineering
Introduction to mechatronics system design, Mechanisms for motion transmission systems, Actuators and Sensors with mixed disciplines, Interfacing, Microcontroller-based control systems, Microcontroller-based instrumentation systems, Systems with mixed disciplines, Analogue active filters.

MDP4136-A Polymer Processing Technology
Scope of polymer processing - Thermoplastics and thermosets - Basic transport phenomena, equations of motion, energy - viscous dissipation - non-newtonian fluids, Poiseuille and Couette flows - lubrication approximation, plasticating extrusion calendaring, Injection molding, and fiber spinning - film blowing - distributive and dispersive mixing mixers.

MDP4136-B Material Selection
Materials selection charts - Performance indices - Objectives and constraints – Case studies.

MDP4136-C Nanotechnology Analysis
Basic understanding of how nanomaterials and nanotechnology can be used to develop new materials, Products and methods for industrial applications in a wide field of life sciences as well as to give the students a foundation for working with synthesis, Characterization , Applications and safety related to nanomaterials and nanostructures in industrial nanotechnological development projects.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

الباب السادس

مواصفات وكفاءات الخريجين
(Graduates Attributes and Cometencies)

1. Mission
1.1 Civil Engineering Program Mission

To graduate civil engineers with distinguished competitive level in local, regional and international markets by providing an excellent atmosphere of study represented in high caliber faculty members and appropriate infrastructure through advanced laboratory equipment and appropriate library facilities. The students thus acquire information and skills concerning latest development in civil engineering applications.

1.2 Mechanical Engineering Program Mission

To graduate mechanical engineers with distinguished competitive level in local, regional and international markets by providing an excellent atmosphere of study represented in high caliber faculty members and appropriate infrastructure through advanced laboratory equipment and appropriate library facilities. The students thus acquire information and skills concerning latest development in mechanical engineering applications.

2. Graduate Attributes for all Engineering Graduates according to the National Academic Reference Standards (NARS 2018)

1. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real life situations;
2. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation;
3. Behave professionally and adhere to engineering ethics and standards;
4. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance;
5. Recognize his/her role in promoting the engineering field and contribute in the development of the profession and the community;
6. Value the importance of the environment, both physical and natural, and work to promote sustainability principles;
7. Use techniques, skills and modern engineering tools necessary for engineering practice;
8. Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post- graduate and research studies;
9. Communicate effectively using different modes and in different languages and audiences, use digital tools and media to deal with academic/professional challenges in a critical and creative manner;
10. Demonstrate leadership qualities, business administration and entrepreneurial skills.

3. Engineering Graduates Cometencies

The graduates of any engineering program should be able to:
1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.

3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.

4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.

5. Practice research techniques and methods of investigation as an inherent part of learning.

6. Plan, supervise and monitor implementation of engineering projects.

7. Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.

8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

3.1 Civil Engineering Cometencies

In addition to the above competencies for all engineering programs the BASIC CIVIL engineering graduate must be able to:

1. Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics and Fluid Mechanics.

2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.

3. Plan and manage construction processes; address construction defects, instability and quality issues; and maintain safety measures in construction and materials.

4. Deal with biddings, contracts and financial issues including project insurance and guarantes; and assess environmental impacts of civil engineering projects.

3.2 Mechanical Engineering Cometencies

In addition to the above competencies for all engineering programs the BASIC MECHANICAL engineering graduate must be able to:

1. Model, analyze and design physical systems applicable to the specific discipline by applying the concepts of: Thermodynamics, Heat Transfer, Fluid Mechanics, solid

Mechanics, Material Processing, Material Properties, Measurements, Instrumentation, Control Theory and Systems, Mechanical Design and Analysis, Dynamics and Vibrations.

2. Carry out designs of mechanical systems and machine elements using appropriate materials both traditional means and computer-aided tools and software contemporary to the mechanical engineering field.

3. Select conventional mechanical equipment according to the required performance.

4. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain mechanical equipment and systems.

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

الباب السابع

إحصائيات

(Statistics)

1. Statistics of Civil Engineering Department

Civil Engineering Department (total hours = 270)															
Project and field training	Engineering applications and design	Basic Engineering Sciences	Engineering culture	Mathematics and basic sciences	Business Administration	Social and Human Sciences	Lecture	Lab.	Tut.	Course Name	Code	University requirements	Faculty requirements	General Specialization	Soecific Specialization
				5			3	0	2	**Engineering Mathematics (1) (Calculus I)**	**PHM0101**		5		
				6			3	2	1	**Engineering Physics (1) (Properties of matter)**	**PHM0102**		6		
				5			2	2	1	**Engineering Chemistry**	**PHM0103**		5		
				4			2	0	2	**Engineering Mechanics (1) (Statics)**	**PHM0104**		4		
		4					1	0	3	**Engineering Drawing and Projection**	**MDP0101**		4		
						3	2	0	1	**Technical English Language**	**HUM0101**	3			
				5			3	0	2	**Engineering Mathematics (2) (Calculus II)**	**PHM0205**		5		
				6			3	2	1	**Engineering Physics (2) (Electricity and Electromagnetism)**	**PHM0206**		6		
				4			2	0	2	**Engineering Mechanics (2) (Dynamics)**	**PHM0207**		4		
		4					1	0	3	**Engineering Drawing and Computer Aided Drafting**	**MDP0202**		4		
		4					2	2	0	**Production Technology**	**MDP0203**		4		
		3					1	2	0	**Computer Technology**	**ECE0201**		3		
			1				1	0	0	**History of Engineering and Technology**	**HUM0202**	1			
				5			3	0	2	**Engineering Mathematics (3) (Multivariable Calculus and Differential Equations)**	**PHM1108**		5		
	5						3	0	2	**Structural Analysis (1)**	**CES1101**			5	

Zero Level   1st

										Course	Code				Level
	6						2	2	2	Plane Surveying (1)	CES1102		6		
	4						2	0	2	Engineering Geology	CES1103		4		
	2						2	0	0	Architectural Construction	CES1104	2			
			4				2	0	2	Fluid Mechanics (1)	MPE1101		4		
4							2	0	2	Structural Analysis (2)	CES1205		4		
	5						2	2	1	Plane Surveying(2)	CES1206			5	
	4						2	0	2	Civil Drawing	CES1207		4		
		4					2	1	1	Properties and Testing of Materials (1)	CES1208		4		
	3						2	0	1	Electromechanical Equipment and Installments Engineering	ECE1202	3			
		3					2	0	1	Thermodynamics (1)	MPE1202	3			
					4		2	0	2	Presentation skills, communication and technical writing	HUM1203	4			
				4			2	0	2	Engineering Mathematics (4) (Probability and Statistical Analysis)	PHM2109	4			
5							3	0	2	Design of Reinforced Concrete Structures (1)	CES2109		5		
5							2	2	1	Structural Analysis (3)	CES2110		5		
	6						2	2	2	Properties and Testing of Materials (2)	CES2111		6		
4							2	1	1	Soil Mechanics	CES2112		4		2nd Level
		4					2	0	2	Environmental and Social Impact Assessment	HUM2104	4			
3							2	0	1	Structural Analysis (4)	CES2213			3	
5							2	1	2	Design of Reinforced Concrete Structures (2)	CES2214		5		
	4						2	0	2	Topographical Surveying	CES2215			4	
	5						2	2	1	Irrigation and Drainage Engineering	CES2216		5		
					4		2	0	2	Engineering Economy	MDP2205	4			
						2	2	0	0	Climate Change and Energy problems	HUM2205	2			
					4		2	0	2	Project Management	MDP2206	4			
4							2	0	2	Design of Reinforced Concrete Structures (3)	CES3117		4		3

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

										Course	Code					
		4					2	0	2	Design of Steel Structures (1)	CES3118			4		
			5				2	1	2	Transportation and Traffic Engineering	CES3119				5	
			4				2	1	1	Hydraulics	CES3120			4		
	4						2	0	2	Elective Course 1	CES3121				4	
	4						2	0	2	Elective Course 2	CES3122				4	
						2	2	0	0	Negotiation Skills	HUM3106	2				
	4						2	0	2	Design of Reinforced Concrete Structures (4)	CES3224			4		
	4						2	0	2	Design of Steel Structures (2)	CES3225			4		
		3					2	0	1	Foundation Engineering (1)	CES3226			3		
	5						2	2	1	Design of Irrigation Works (1)	CES3227			5		
						4	2	0	2	Entrepreneurship and Marketing	HUM3207	4				
	4						2	0	2	Elective Course 3	CES3228				4	
			4				1	2	1	Computer Applications in Civil Engineering	CES3229				4	
		5					2	2	1	Sanitary Engineering	CES4130			5		4th Level
	5						2	2	1	Design of Irrigation Works (2)	CES4131				5	
		3					2	0	1	Highway Engineering	CES41332			3		
		3					2	0	1	Foundation Engineering (2)	CES4133			3		
	4						2	0	2	Elective Course 4	CES4134				4	
	4						2	0	2	Elective Course 5	CES4135				4	
		5					2	2	1	Computerized Structural Analysis	CES4238				5	
		4					2	0	2	Metallic Bridges	CES4239				4	
	4						2	0	2	Design of Reinforced Concrete Structures (5)	CES4240				4	
				4			2	0	2	Specification and Quantities	CES4241			4		
						4	2	0	2	Human Rights & Labor Law	HUM4208	4				
8							0	8	0	B.Sc. Project	CES4800				8	
8	81	86	13	51	12	19				**Total Hours**		20	81	94	75	
3	30	31.9	4.8	18.9	4.4	7				**(%)**		7.4	30	34.8	27.8	

2.1 Statistics of Mechanical Power Engineering Department

Project and field training	Engineering applications and design	Basic Engineering Sciences	Engineering culture	Mathematics and basic sciences	Business Administration	Social and Human Sciences	Lecture	Lab.	Tut.	Course Name	Code	University requirements	Faculty requirements	General Specialization	Soecific Specialization	
										Mechanical Power Engineering (Total Hours = 270)						
				5			3	0	2	**Engineering Mathematics (1) (Calculus I)**	**PHM0101**		5			
				6			3	2	1	**Engineering Physics (1) (Properties of matter)**	**PHM0102**		6			
				5			2	2	1	**Engineering Chemistry**	**PHM0103**		5			
				4			2	0	2	**Engineering Mechanics (1) (Statics)**	**PHM0104**		4			
		4					1	0	3	**Engineering Drawing and Projection (1)**	**MDP0101**		4			Zero Level
						3	2	0	1	**Technical English Language**	**HUM0101**	3				
				5			3	0	2	**Engineering Mathematics (2) (Calculus II)**	**PHM0205**		5			
				6			3	2	1	**Engineering Physics (2) (Electricity and Electromagnetism)**	**PHM0206**		6			
				4			2	0	2	**Engineering Mechanics (2) (Dynamics)**	**PHM0207**		4			
		4					1	0	3	**Engineering Drawing and Projection (2)**	**MDP0202**		4			
			4				2	2	0	**Production Technology**	**MDP0203**		4			
			3				1	2	0	**Computer Technology**	**ECE0201**		3			
			1				1	0	0	**History of Engineering and Technology**	**HUM0202**	1				
				5			3	0	2	**Engineering Mathematics (3) (Multivariable Calculus and Differential Equations)**	**PHM1108**		5			1st Level
	6						2	4	0	**Machine Drawing**	**MDP1107**			6		

									Course	Code					Level
	4					2	1	1	Fluid Mechanics (1)	MPE1101			4		
	4					2	0	2	Production Engineering	MDP1108			4		
			4			2	0	2	Mechanics of Rigid Bodies	MDP1109			4		
	4					2	0	2	Electrical & Electronic Engineering	ECE1103			4		
			4			2	0	2	Engineering Mathematics (4) ((Probability and Statistical Analysis)	PHM1209		4			
5						1	4	0	Computer aided Machine Drawing	MDP1210			5		
			4			2	1	1	Engineering Physics (3) (Modern Physics)	PHM1210		4			
	5					3	1	1	Thermodynamics (1)	MPE1202			5		
5						3	1	1	Stress Analysis	MDP1211			5		
					4	2	0	2	Presentation skills, communication and technical writing	HUM1203	4				
			5			3	0	2	Engineering Mathematics (5) (Numerical Analysis)	PHM2111		5			2nd Level
	4					2	0	2	Kinematics of Machines	MDP2112			4		
5						3	0	2	Machine Element Design	MDP2113				5	
	5					2	1	2	Metallurgy	MDP2114			5		
		4				2	0	2	Environmental and Social Impact Assessment	HUM2104		4			
				4		2	0	2	Engineering Economy	MDP2115		4			
	5					3	1	1	Heat & Mass Transfer (1)	MPE2203			5		
	5					3	1	1	Measurements and instrumentations	MDP2216			5		
				4		2	0	2	Project Management	MDP2217		4			
	4					2	0	2	Dynamics of Machines	MDP2218				4	
					3	2	0	1	Climate Change and Energy problems	HUM2205	3				
	5					2	2	1	Computer Applications in Mechanical Engineering	MDP2219		5			
4						2	0	2	Machine Design (1)	MDP3120			4		3rd Level
	5					2	1	2	Thermodynamics (2)	MPE3104				5	
	5					2	2	1	Fluid Mechanics (2)	MPE3105				5	

							Lec	Tut	Lab	Course	Code					Level
	3						2	1	0	Computer Applications in Mechanical Power Engineering	MPE3106			3		
						2	2	0	0	Negotiation Skills	HUM3106	2				
	4						2	0	2	System Dynamics	MDP3121			4		
	4						2	0	2	Elective Course (1)	MPE3107				4	
		4					2	0	2	Theory of Vibration	MDP3207			4		
		6					2	2	2	Theory of Combustion	MPE3208				6	
		6					2	2	2	Hydraulic Machines	MPE3209				6	
	4						2	0	2	Thermal Power Stations	MPE3210			4		
						4	2	0	2	Entrepreneurship and Marketing	HUM3207	4				
	4						2	1	1	Heat & Mass Transfer (2)	MPE3211			4		
	3						2	0	1	Pipelines and Networks	MPE4113				3	
		3					2	0	1	Automatic Control	MPE4114				3	
	5						2	2	1	Refrigeration & Air Conditioning (1)	MPE4115				5	
	5						2	2	1	Hydraulic Power Systems	MPE4116				5	
	4						2	0	2	Elective Course (2)	MPE4117				4	4th Level
	4						2	0	2	Elective Course (3)	MPE4118			4		
	6						3	2	1	Refrigeration & Air Conditioning (2)	MPE4221				6	
	4						3	1	0	Internal Combustion Engines	MPE4222				4	
						4	2	0	2	Human Rights & Labor Law	HUM4208	4				
	4						2	0	2	Elective Course (4)	MPE4223				4	
	4						2	0	2	Elective Course (5)	MPE4224				4	
8							0	8	0	B.Sc. Project	MPE4800				8	
8	80	85	12	57	8	20				Total hours		21	81	87	81	
3	29.6	31.5	4.4	21.1	3	7.4				(%)		7.8	30	32.2	30	

2.2 Statistics of Mechanical Design and Production Engineering Department

Project and field training	Engineering applications and design	Basic Engineering Sciences	Engineering culture	Mathematics and basic sciences	Business Administration	Social and Human Sciences	Lecture	Lab.	Tut.	Course Name	Code	University requirements	Faculty requirements	General Specialization	Soecific Specialization	
Mechanical Design and Production Engineering Department (Total Hours = 270)																
				5			3	0	2	**Engineering Mathematics (1) (Calculus I)**	**PHM0101**		5			Zero Level
				6			3	2	1	**Engineering Physics (1) (Properties of matter)**	**PHM0102**		6			
				5			2	2	1	**Engineering Chemistry**	**PHM0103**		5			
				4			2	0	2	**Engineering Mechanics (1) (Statics)**	**PHM0104**		4			
		4					1	0	3	**Engineering Drawing and Projection (1)**	**MDP0101**		4			
						3	2	0	1	**Technical English Language**	**HUM0101**	3				
				5			3	0	2	**Engineering Mathematics (2) (Calculus II)**	**PHM0205**		5			
				6			3	2	1	**Engineering Physics (2) (Electricity and Electromagnetism)**	**PHM0206**		6			
				4			2	0	2	**Engineering Mechanics (2) (Dynamics)**	**PHM0207**		4			
		4					1	0	3	**Engineering Drawing and Projection (2)**	**MDP0202**		4			
			4				2	2	0	**Production Technology**	**MDP0203**		4			
			3				1	2	0	**Computer Technology**	**ECE0201**		3			
			1				1	0	0	**History of Engineering and Technology**	**HUM0202**	1				
				5			3	0	2	**Engineering Mathematics (3) (Multivariable Calculus and Differential Equations)**	**PHM1108**		5			1st Level
	5						2	4	0	**Machine Drawing**	**MDP1107**			5		

C1	C2	C3	C4	C5	C6	C7	L	T	P	Course	Code	R1	R2	R3	R4	Level
		4					2	1	1	Fluid Mechanics (1)	MPE1101			4		
		4					2	0	2	Production Engineering	MDP1108			4		
			4				2	0	2	Mechanics of Rigid Bodies	MDP1109			4		
		4					2	0	2	Electrical & Electronic Engineering	ECE1103			4		
			4				2	0	2	Engineering Mathematics (4) ((Probability and Statistical Analysis)	PHM1209		4			
	5						1	4	0	Computer aided Machine Drawing	MDP1210			5		
			4				2	1	1	Engineering Physics (3) (Modern Physics)	PHM1210		4			
		5					3	1	1	Thermodynamics (1)	MPE1202			5		
	5						3	1	1	Stress Analysis	MDP1211			5		
				4			2	0	2	Presentation skills, communication and technical writing	HUM1203	4				
			5				3	0	2	Engineering Mathematics (5) (Numerical Analysis)	PHM2111		5			
		4					2	0	2	Kinematics of Machines	MDP2112			4		
	5						3	0	2	Machine Element Design	MDP2113				5	
		5					2	1	2	Metallurgy	MDP2114				5	
			4				2	0	2	Environmental and Social Impact Assessment	HUM2104		4			2nd Level
				4			2	0	2	Engineering Economy	MDP2115			4		
		5					3	1	1	Heat & Mass Transfer (1)	MPE2203			5		
		5					3	1	1	Measurements and instrumentations	MDP2216			5		
				4			2	0	2	Project Management	MDP2217		4			
		4					2	0	2	Dynamics of Machines	MDP2218			4		
					3		2	0	1	Climate Change and Energy problems	HUM2205	3				
		5					2	2	1	Computer Applications in Mechanical Engineering	MDP2219		5			
4							2	1	1	Machine Design (1)	MDP3120				4	3rd
4							2	0	2	System Dynamics	MDP3121			4		

كلية الهندسة — جامعة السويس

										Course	Code					
		4					2	1	1	Materials Handling	MDP3123			4		
	5						2	1	2	Theory & Technology of Metal Forming	MDP3124				5	
		4					2	0	2	Elective Course (1)	MDP3125				4	
		4					2	0	2	Elective Course (2)	MDP3126				4	
						2	2	0	0	Negotiation Skills	HUM3106	2				
		4					2	0	2	Theory of Vibration	MDP3222			4		
	5						3	1	1	Machine Design (2)	MDP3228				5	
	5						2	1	2	Theory & Technology of Metal Cutting	MDP3229				5	
	6						2	2	2	Modeling & Simulation of Manufacturing Systems	MDP3230			6		
	4						2	0	2	Elective Course (3)	MDP3231				4	
						4	2	0	2	Entrepreneurship and Marketing	HUM3207	4				
	5						3	1	1	Failure Analysis	MDP4132				5	4th Level
	5						2	2	1	Maintenance Planning and Control	MDP4133				5	4th Level
	5						2	2	1	Computer Aided Design	MDP4134				5	4th Level
	3						2	0	1	Elective Course (4)	MDP4135				3	4th Level
	3						2	0	1	Elective Course (5)	MDP4136				3	4th Level
		3					2	0	1	Automatic Control	MPE4114			3		4th Level
	6						2	2	2	Computer Aided Manufacturing	MDP4238				6	4th Level
	5						2	1	2	Composite Materials	MDP4239				5	4th Level
		4					2	0	1	Facility Planning & Analysis	MDP4240			4		4th Level
						4	2	0	2	Human Rights & Labor Law	HUM4208	4				4th Level
		4					2	1	1	Computer Applications in Design and Production Engineering	MDP4241			4		4th Level
8							0	8	0	B.Sc. Project	MDP4800				8	4th Level
8	85	80	12	57	8	20				**Total hours**		21	81	87	81	
3	31.5	29.6	4.4	21.1	3	7.4				**(%)**		7.8	30	32.2	30	

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

Suez Engineering - 2016 Regulations according to New Framework

1. Civil Engineering

Semester	Lectures (hr)	Labs/Tutorials (hr)	Contact (hr)	US Credits	ECTS	TSWL
1	13	14	27	18	29	53
2	13	14	27	18	29	53
3	14	12	26	18	29	54
4	14	13	27	18	30	55
5	13	15	28	18	29	54
6	14	13	27	18	30	55
7	14	13	27	18	29	54
8	13	15	28	18	29	54
9	12	16	28	17	28	52
10	10	15	25	15	25	46
Sum Per Degree	130	140	270	177	289	530

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

2.1. Mechanical Power engineering

Semester	Per Week					
	Lectures (hr)	Labs/Tutorials (hr)	Contact (hr)	US Credits	ECTS	TSWL
1	13	14	27	18	29	53
2	13	14	27	18	29	53
3	13	14	27	18	29	53
4	13	14	27	18	29	53
5	14	13	27	18	30	55
6	14	12	26	18	29	54
7	14	13	27	18	30	55
8	12	16	28	17	28	52
9	12	16	28	17	28	52
10	12	14	26	17	27	50
Sum Per Degree	130	140	270	177	289	530

2.2. Mechanical Design and Production Engineering

Semester	Per Week					
	Lectures (hr)	Labs/Tutorials (hr)	Contact (hr)	US Credits	ECTS	TSWL
1	13	14	27	18	29	53
2	13	14	27	18	29	53
3	13	14	27	18	27	50
4	13	14	27	18	29	53
5	14	13	27	18	30	55
6	14	12	26	18	29	54
7	14	13	27	18	30	55
8	13	15	28	18	29	54
9	13	15	28	18	29	54
10	10	16	26	15	27	49
Sum Per Degree	130	140	270	177	289	530

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)

72

All programs ("civil", "mechanical power", and "Mechanical design and production" engineering) have the same statistics

- Total number of lectures = 130
- Total number of lab and tuturials = 140
- Total contact hours = 270
- Total credit hours = 177
- % Lectures/total contact hours = 48%

Total Contact Hours

Lectures	— 250	260	270	280
A	Determine BC from (eq.1)			
90	160	170	180	190
100	150	160	170	180
110	140	150	160	170
120	130	140	150	160
130	120	130	140 (All Program)	150
140	110	120	130	140
150	100	110	120	130
160	90	100	110	120

Valid / Invalid

Caculation of Credits with A +BC/3 using Eq.2

	Contact Hrs. = 250		Contact Hrs. = 260		Contact Hrs. = 270		Contact Hrs. = 280	
	Contact	Credits	Contact	Credits	Contact	Credits	Contact	Credits
90	250	143	260	147	270	150	280	153
100	250	150	260	153	270	157	280	160
110	250	157	260	160	270	163	280	167
120	250	163	260	167	270	170	280	173
130	250	170	260	173	270	177 (All program)	280	180
140	250	177	260	180	270	183	280	187
150	250	183	260	187	270	190	280	193
160	250	190	260	193	270	197	280	200

Valid / Invalid

% Lectures / total Contact

	Contact 250	Contact 260	Contact 270	Contact 280
90	36%	35%	33%	32%
100	40%	38%	37%	36%
110	44%	42%	41%	39%
120	48%	46%	44%	43%
130	52%	50%	48% (all programs)	46%
140	56%	54%	52%	50%
150	60%	58%	56%	54%
160	64%	62%	59%	57%

Valid / Invalid

#	Program Title	Total Number of Courses	Contact Hours			Credits, ECTS and TSWL Per Degree			Compliance with SCU Requirements issued 2016 + Recommendations of NARS-2009 (in % of credit Hours)										
			Lectures	Labs/Tutorials	Total Contact Hours	Credits	ECTS	TSWL	Social and Human Sciences	Business Administration	Mathematics and basic sciences	Engineering culture	Basic Engineering Sciences	Engineering applications and design	Project and field training	University Requirements 6 - 10	Faculty Requirements 22 - 30	General Specialization 30 - 35	Specific Specialization 20 - 30
1	Civil Engineering	66	130	140	270	177	289	530	7	4.4	18.9	4.8	31.9	30	3	7.4	29.3	34.8	28.5
2.1	Mechanical Power Engineering	64	130	140	270	177	289	530	7.4	3	21.1	4.4	31.9	29.3	3	7.8	30	34.8	27.4
2.2	Mechanical Design and Production Engineering	64	130	140	270	177	289	530	7.4	3	21.1	4.4	29.6	31.5	3	7.8	30	34.1	28.1

Overall Data of All Bachelor Programs
Faculty of Engineering- Suez University
Academic Regulations for Bachelor of Engineering Programs
Traditional System

اللائحة الداخلية لمرحلة البكالوريوس بنظام الفصلين الدراسيين (ساعات الاتصال)